

## SECTION V. MAINTENANCE

### 2.5.1 INTRODUCTION

This section contains the preventive and corrective maintenance procedures for the acquisition control unit (ACU) cabinet. Preventive maintenance ensures that the ACU cabinet remains operational. Corrective maintenance allows fault isolation to a faulty field replaceable unit (FRU). The procedures for removal and replacement of a faulty FRU are also provided in this section. Malfunctions within the ACU cabinet are identified by the ASOS continuous self-test (CST). Maintenance information for the pressure sensor is located in Chapter 8. Maintenance information for the Codex modem is located in Chapter 13.

### 2.5.2 PREVENTIVE MAINTENANCE

Preventive maintenance consists of those procedures that are performed on a scheduled basis to maintain the ACU cabinet in an operational state. All preventive maintenance tasks for the ACU cabinet are provided in table 2.5.1.

**Table 2.5.1. ACU Preventive Maintenance Schedule**

Interval	What To Do	How To Do It
90 days	Clean air filters	Paragraph 2.5.2.1
	Clean cathode ray tube (CRT)/display screens on the OID's, VDU's and CVD's	Paragraph 2.5.2.2
	Clean ACU cabinet	Paragraph 2.5.2.3
	Check memory board LOW BATT indicator	Paragraph 2.5.2.4
Semiannually	Check/clean batteries	Paragraph 2.5.2.5

**2.5.2.1 Air Filter Cleaning.** Due to continuous air flow through the ACU cabinet, the air filters can become clogged with dust and foreign matter resulting in an unstable thermal condition. Periodic air filter cleaning prevents this condition from occurring. Refer to table 2.5.2 for the air filter cleaning procedure.

**2.5.2.2 Display Screen Cleaning.** Cleaning the display screens is required to remove dust and dirt that accumulate on the screens. The display screen cleaning procedure is provided in Chapter 1, Section V.

**2.5.2.3 ACU Cabinet Cleaning.** Cleaning the ACU cabinet is required to remove dust and dirt that accumulate on the external surface and to remove any internal debris. The ACU cabinet cleaning procedure is provided in table 2.5.3.

**2.5.2.4 Check Memory Board LOW BATT Indicator.** The LOW BATT indicator on ACU Memory Board 1A2A3 should be checked every 90 days or whenever the technician visits the site. If the LOW BATT indicator is illuminated, the backup battery on the board has failed and ACU Memory Board 1A2A3 must be replaced.

**2.5.2.5 Check/Clean Batteries.** For Class II systems, there are two types of battery packs depending on which power supply assembly is installed. The power supply assembly 62828-40124-10 configuration has five batteries in Battery Box 1A8; the power supply assembly 62828-40265-10 configuration has only four batteries. The batteries should be checked and cleaned semiannually or whenever the CST indicates that the batteries have failed or are low. The individual batteries should be removed from the battery box in accordance with the battery removal procedure of table 2.5.30. The batteries should be checked for leakage or corrosion on the terminals and replaced in accordance with the installation procedure of table 2.5.30. If a battery is found to be leaking, it should be replaced. If battery terminals are corroded, they should be cleaned with a terminal brush or other wire brush before the battery is reinstalled.

**Table 2.5.2. Air Filter Cleaning**

Step	Procedure
	<p>Tools and material required:</p> <ul style="list-style-type: none"> <li>Vacuum cleaner</li> <li>Mild detergent and water</li> <li>Lint-free cloths</li> <li>Phillips screwdriver</li> </ul> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>ACU cabinet power is left on when cleaning the air filter. Death or severe injury may result if hands and tools are not kept clear of moving blower parts and cabinet power wiring when cleaning filter.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>There are two types of cabinets for the ACU. One type has a partial length front door with the fan/blower assembly mounted behind an air intake grill. The other type of cabinet has a full length door with the fan/blower assembly immediately accessible with the door open.</p>
1	If the ACU cabinet has a partial length front door, remove six Phillips screws and lockwashers securing air intake grill to lower front of cabinet. Remove air intake grill. Proceed to step 3.
2	If cabinet has a full length front door, open front door. Loosen knurled knobs on either side of shield in front of fan/blower B1 and remove shield.
3	Remove filter.
4	Clean filter using detergent solution.
5	Dry filter.
6	Vacuum air intake grill (both types of cabinets) and blower shield (full length door cabinet).
7	Reinstall filter.
8	If full length door cabinet, install blower shield in front of blower and hand tighten two knobs on shield.
9	If partial length front door cabinet, position air intake grill in front of fan/blower assembly. Install Phillips screws and lockwashers securing grill to cabinet.

**Table 2.5.3. ACU Cabinet Cleaning**

Step	Procedure
	<p>Tools and material required:</p> <ul style="list-style-type: none"> <li>Hand-held vacuum cleaner</li> <li>Mild detergent and water</li> <li>Lint-free cloths</li> </ul> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Death or severe injury may result if power is not removed from ACU prior to performing maintenance activities inside the cabinet. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Wring out cloth before washing surfaces.</p>
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
3	Clean external surfaces using lint-free cloth dampened with a mixture of mild detergent and water.
4	Dry surfaces using lint-free cloth.
5	Using hand-held vacuum cleaner, remove any loose debris inside ACU cabinet.
6	Apply facility power to ACU cabinet.
7	Set UPS POWER switch to 1 (on) position.

### 2.5.3 CORRECTIVE MAINTENANCE

**2.5.3.1 Introduction.** Corrective maintenance involves the isolation, removal, and replacement of faulty FRU's. The ASOS is equipped with a powerful automatic self-test program that is designed to isolate most faults to a single FRU. However, because of the system hardware configuration, there will be instances when the diagnostics can only isolate to a group of FRU's, such as a sensor or an I/O channel. The troubleshooting approach for single FRU and group FRU types of conditions is different.

When the FRU is specifically called out, the technician need only replace the faulty unit. When a group of FRU's is called out, the technician must isolate the failed FRU by referencing the theory of operation and associated drawings and following two basic procedures. The first procedure involves connector checks, which ensure that all boards, cables, and connectors are present and properly connected. The second procedure involves ac and dc power supply tests. Although the system monitors all critical power supply voltages in the ACU, data collection package (DCP), and sensors, failure of a power supply may result in a loss of communications between the system and its FRU's.

Power supplies are tested through both visual and mechanical inspection. Before measuring any voltages, the technician should visually inspect the suspected area for obvious signs of power supply failure. During this inspection, the technician should pay particular attention to circuit breakers, panel lights, and light emitting diode (LED) indicators on the units to ensure that they are functioning normally. The physical checks involve checking fuses and the power supply voltages using a DMM. In most cases, these tests will isolate the fault.

After an FRU has been replaced, the technician must allow the ASOS to automatically initialize upon the application of primary power to the ACU and verify that the continuous self-test diagnostics run without failure. The technician should also display the corresponding maintenance page on the OID and ensure that the FRU passes its CST checks. Table 2.5.4 provides corrective maintenance symptom analysis information for the ACU.

**Table 2.5.4. Corrective Maintenance Symptom Analysis**

Symptom	What To Do	How To Do It
System is completely dead.	Check ac and dc power.	Reference ACU AC/DC power distribution diagram figure 2.4.12 and verify ac and dc voltages.
Problem with ACU uninterruptible power supply (UPS) if installed.	Check UPS.	Paragraph 2.5.3.2
ACU computer does not initialize.	Check VME card rack.	Paragraph 2.5.3.3
Loss of ACU/DCP	Check ACU/DCP communications link.	Paragraph 2.5.3.4
Failure of an SIO board or loss of communication with a peripheral or user	Check SIO boards. Check modems.	Paragraph 2.5.3.5 Paragraph 2.5.5
Printer malfunction	Check printer	Paragraph 2.5.7 and printer vendor manual

**2.5.3.2 UPS Checks.** In a Class II system with serial number 437 and below, and in certain Class I systems which have been retrofitted per FMK # 088, for all components except the fan/blower assembly. If power is not applied to the ACU when the UPS POWER switch is set to ON (1), but the blower still operates, there could be a failure in the UPS. During operation, there are a number of tools available to fault isolate the UPS. The CST continually checks the status of the UPS and provides status information on the ACU UPS page of the OID. Error messages are printed on the printer and entered into the maintenance log. Also, the status

LED's on the UPS status panel provide valuable information for analyzing UPS problems. Table 2.5.5 provides procedures for troubleshooting the SOLA UPS. Table 2.5.6 provides procedures to prepare this SOLA UPS for maintenance and to return the UPS to operation following service.

In a Class II system with serial number 438 and above, a Deltek UPS (either UPS 62828-90338-10 or 62828-90338-20) provides the same functions except that the troubleshooting procedures are conducted primarily from the OID page. Table 2.5.7 provides the procedures for troubleshooting the Deltek UPS based on observed symptoms.

**Table 2.5.5. UPS Fault Isolation (62828-40124-10)**

Step	Symptom	Checks/Corrective Actions
1	UPS will not turn on.  Indicators on Status Panel Board 1A4A1 are all extinguished.	<p>Ensure that facility power is being applied to ACU.</p> <p>On back of Power Supply Assembly 1A4, check circuit breaker CB1. If tripped, reset CB1 and cycle OUTPUT POWER switch on status panel off and back on.</p> <p>Remove power from UPS and remove UPS cover per table 2.5.6.</p> <p>Visually inspect 1.5 KVA Filter Board 1A4A3 for damage. Replace filter board if damaged.</p> <p>Apply facility power to ACU cabinet.</p> <p>Using digital multimeter (DMM), verify <math>120 \pm 10\%</math> vac between terminal 1 of circuit breaker CB1 and WHT terminal of 1.5 KVA Filter Board 1A4A3. If voltage is not present, replace CB1.</p> <p>Verify <math>120 \pm 10\%</math> vac between WHT/BLK and BLK/RED terminals of 1.5 KVA Filter Board 1A4A3. If voltage is not present, replace A3.</p> <p>Replace 1.5 KVA Inverter Board 1A4A4.</p> <p>If problem persists, replace transformer 1A4T1.</p>
2	UPS will not turn on.  BATTERY indicator on status panel is on or blinking, but OUTPUT indicator is off.	<p>This is normal situation with OUTPUT POWER switch set to off (0); therefore, ensure that OUTPUT POWER switch on Status Panel Board 1A4A1 is in the on (1) position.</p> <p>Remove power from UPS and remove UPS cover per table 2.5.6.</p> <p>Inspect ribbon cable on Status Panel Board 1A4A1 for damage or loose connections.</p> <p>Set OUTPUT POWER switch to on (1) position. Using DMM, ensure continuity across terminals of switch. Replace switch if no continuity.</p> <p>Set OUTPUT POWER switch to off (0) position.</p> <p>Reinstall UPS cover per table 2.5.6.</p> <p>To ensure that problem was not due to cable connectors, set OUTPUT POWER switch to on (1) position and attempt to operate UPS again.</p> <p>If problem is not corrected, replace Status Panel Board 1A4A1.</p> <p>If problem persists, replace 1.5 KVA Inverter Board 1A4A4.</p>

Table 2.5.5. UPS Fault Isolation (62828-40124-10) - CONT

Step	Symptom	Checks/Corrective Actions
3	<p>UPS operates, but CPU cannot communicate with RS-232 Interface Board 1A4A2.</p> <p>Failure indicated for TIMEOUT test or RS-232 test on ACU UPS page at OID.</p>	<p>From ACU serial communications page on OID, determine which SIO board and port the UPS is assigned.</p> <p>Select ACU SIO page corresponding to board to which UPS is assigned.</p> <p>From ACU SIO page, press TEST key to run CST on this SIO board. If port assigned to UPS fails LOOPBACK or XMIT ERRORS test, replace SIO board. If both tests pass, continue.</p> <p>At rear of UPS (Power Supply Assembly 1A4), disconnect W014/W016 connector from UPS RS-232 connector (1A4A2-J20).</p> <p>Insert RS-232 test box between UPS RS-232 connector and corresponding W014/W016 connector.</p> <p>Select ACU UPS page at OID.</p> <p>From ACU UPS page, press TEST key to run CST on UPS.</p> <p>On RS-232 tester, ensure that transmit (TxD) and receive (RxD) signals are being passed between the UPS and the SIO board (at least once per minute). If both signals are active, replace the following (in order) and retry UPS:</p> <ol style="list-style-type: none"> <li>SIO board to which UPS is connected</li> <li>RS-232 Interface Board 1A4A2</li> </ol> <p>If transmit signal is missing, replace SIO board.</p> <p>If receive signal is missing, check/replace W078. If W078 P1-3 to P2-2 check measures continuity, continue.</p> <p>Remove power from UPS and remove UPS cover per table 2.5.6.</p> <p>Inspect ribbon cable between RS-232 interface board and 1.5 KVA Inverter Board 1A4A4. Ensure that ribbon cable is not twisted or damaged. Reseat connectors to ensure proper connection.</p> <p>After checking ribbon cable, replace cover per table 2.5.6 and operate system again.</p> <p>If problem is not corrected, replace RS-232 Interface Board 1A4A2.</p> <p>If problem persists, replace 1.5 KVA Inverter Board 1A4A4.</p>
4	ALARM indicator on status panel is illuminated.	<p>Overheat condition likely.</p> <p>On UPS status panel, set OUTPUT POWER switch to off (0) position.</p> <p>Inspect inside of ACU cabinet to ensure proper ventilation around UPS and that ACU blower is operating. Replace if necessary.</p> <p>Allow UPS to cool.</p> <p>Set UPS OUTPUT POWER switch to on (1) position. If UPS fails to turn on and ALARM indicator remains illuminated, set UPS OUTPUT power switch to off (0) position and proceed to step 5.</p>

Table 2.5.5. UPS Fault Isolation (62828-40124-10) - CONT

Step	Symptom	Checks/Corrective Actions
5	With UPS cool, ALARM indicator on UPS status panel is illuminated when facility power is applied to ACU. UPS does not output power.	<p>Ensure that connector W030-P1 is securely attached to connector J1 on Battery Box 1A8. Attempt to operate UPS again by setting OUTPUT POWER switch to on (1) position.</p> <p>Remove power from UPS and remove UPS cover per table 2.5.6.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>Ensure that W030-P1 connector is disconnected from Battery Box 1A8 before attempting to test fuse 1A4F1 for continuity. Failure to disconnect the battery box may result in injury to personnel or damage to equipment.</p> <p>Ensure that connector W030-P1 is disconnected from Battery Box 1A8.</p> <p>Inspect UPS fuse 1A4F1 and test for continuity using DMM. If fuse is good, proceed to next step. If fuse is open, replace fuse. If, after replacing fuse, problem persists and fuse again opens, replace 1.5 KVA Inverter Board 1A4A4.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>Exercise extreme caution in connecting UPS battery and taking measurement with UPS cover off. Death or severe injury may occur if contact is made with battery terminal or wires.</p> <p>Connect battery cable W030-P1 to connector J1 on Battery Box 1A8.</p> <p>Using DMM, measure dc voltage at battery terminals (RED+ and BLK-) of Inverter Board 1A5.</p> <p>Disconnect battery cable W030-P1 from connector J1 on Battery Box 1A8.</p> <p>If indication was less than <math>40 \pm 4</math> vdc, replace batteries BT1 through BT5 in Battery Box 1A8. If problem persists, replace 1.5 KVA Inverter Board 1A4A4.</p> <p>If battery voltage was above <math>40 \pm 4</math> vdc, replace 1.5 KVA Inverter Board 1A4A4.</p>
6	After 24 hours of continuous charging (UPS has operated continually on facility power), BATTERY indicator on UPS status panel blinks, indicating low battery.	<p>Remove power from ACU and remove UPS cover per table 2.5.6.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>Ensure that W030-P1 connector is disconnected from Battery Box 1A8 before attempting to test fuse 1A4F1 for continuity. Failure to disconnect battery box may result in injury to personnel or damage to equipment.</p> <p>Inspect UPS fuse 1A4F1 and test for continuity using DMM. If fuse is good, proceed to next step. If fuse is open, replace fuse. If, after replacing fuse, problem persists and fuse again opens, replace 1.5 KVA Inverter Board 1A4A4.</p> <p>Replace batteries BT1 through BT5 in Battery Box 1A8.</p> <p>If problem persists, replace 1.5 KVA Inverter Board 1A4A4.</p> <p>If problem persists, replace transformer 1A4T1.</p>

Table 2.5.5. UPS Fault Isolation (62828-40124-10) - CONT

Step	Symptom	Checks/Corrective Actions
7	One or more indicators on Status Panel Board 1A4A1 do not illuminate.	<p>Remove power from UPS and remove UPS cover per table 2.5.6.</p> <p>Inspect ribbon cable on Status Panel Board 1A4A1 for damage or loose connections.</p> <p>After checking ribbon cable, reinstall UPS cover per table 2.5.6 and operate system again.</p> <p>If problem persists, replace KVA Status Panel Board 1A4A1.</p> <p>If problem persists, replace 1.5 KVA Inverter Board 1A4A4.</p>
8	UPS beeps when OUTPUT POWER switch is set to off (0) position.	<p>Replace 1.5 KVA Inverter Board 1A4A4.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Failure (step 9) may be result of circuit breaker CB1 tripping below its rated value. If problem persists after performing the following corrective actions, CB1 may be faulty.</p>
9	UPS circuit breaker 1A4CB1 continually trips when facility power is applied to ACU cabinet.	<p>Remove power from ACU and remove UPS cover per table 2.5.6.</p> <p>Inspect 1.5 KVA Filter Board 1A4A3 and 1.5 KVA Inverter Board 1A4A4 for signs of damage. Replace if necessary.</p> <p>On 1.5 KVA Filter Board 1A4A3, disconnect CB1 output wire from BLK terminal.</p> <p>Reset CB1.</p> <p>Apply facility power to ACU cabinet. If CB1 trips, replace CB1.</p> <p>Remove facility power from ACU cabinet.</p> <p>Reconnect CB1 wire to BLK terminal of 1.5 KVA Filter Board 1A4A3.</p> <p>On 1.5 KVA Inverter Board 1A4A4, disconnect input wires from WHT/BLK and BLK/RED terminals.</p> <p>Apply facility power to ACU cabinet. If CB1 trips, replace 1.5 KVA Filter Board 1A4A3.</p> <p>Remove facility power from ACU cabinet.</p> <p>Reconnect wires to WHT/BLK and BLK/RED terminals of 1.5 KVA Inverter Board 1A4A4.</p> <p>On 1.5 KVA Filter Board 1A4A3, disconnect connector from J10.</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that W030-P1 connector is disconnected from Battery Box 1A8 before attempting to disconnect transformer T1. Failure to disconnect battery box may result in injury to personnel or damage to equipment.</p>

Table 2.5.5. UPS Fault Isolation (62828-40124-10) - CONT

Step	Symptom	Checks/Corrective Actions
		<p>On 1.5 KVA Inverter Board 1A4A4, tag and disconnect 10 transformer 1A4T1 wires from their terminals.</p> <p>Apply facility power to ACU cabinet. If CB1 trips, replace 1.5 KVA Inverter Board 1A4A4.</p> <p>Remove facility power from ACU cabinet.</p> <p>Reconnect 10 transformer wires to respective connectors on 1.5 KVA Inverter Board 1A4A4.</p> <p>Apply facility power to ACU cabinet. If CB1 trips, replace transformer 1A4T1.</p> <p>Remove facility power from ACU cabinet.</p> <p>Reconnect connector to J10 on 1.5 KVA Filter Board 1A4A3.</p> <p>Disconnect W014/W016 connector P13 from connector J7 on 1.5 KVA Filter Board 1A4A3.</p> <p>Apply facility power to ACU cabinet. If CB1 trips, replace 1.5 KVA Filter Board 1A4A3. If not, problem is not in UPS components, but a short circuit probably exists in ACU cabinet wiring or in one of the loads connected to the UPS output.</p>
10	Failure indicated for TRIAC test on ACU UPS page at the OID.	<p>Replace 1.5 KVA Inverter Board 1A4A4.</p> <p>If problem persists, replace transformer 1A4T1.</p>

Table 2.5.6. UPS (62828-40124-10) Pre-Service and Post-Service Procedures

Step	Procedure
<b>PRE-SERVICE: REMOVING UPS POWER AND REMOVING COVER</b>	
	<p>Tools required:</p> <p>Small flat-tipped screwdriver</p> <p>No. 2 Phillips screwdriver</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from the UPS by performing the following steps. Death or severe injury may result if power is not completely removed from the UPS prior to removing the cover on Power Supply Assembly 1A4 and performing maintenance on UPS subassemblies.</p>
1	Set OUTPUT POWER switch S1 on UPS status panel to off (0) position. OUTPUT indicator on status panel extinguishes.
2	Remove facility power from the ACU cabinet.
3	On Battery Box 1A8, disconnect cable connector W030-P1 from battery box connector J1. To remove cable connector, squeeze tabs on side of connector inward while rocking the connector free.
4	Wait at least 30 seconds while UPS capacitors discharge through bleeders and other drains.
5	Remove screws, lockwashers, and flat washers that hold Power Supply Assembly 1A4 drawer to ACU cabinet. Pull power supply assembly drawer out of cabinet to its fully extended and locked position.
6	Remove three screws and washers at lower front of Power Supply Assembly 1A4 cover.
7	Remove three screws and washers at top rear of Power Supply Assembly 1A4 cover.



Table 2.5.6. UPS (62828-40124-10) Pre-Service and Post-Service Procedures -CONT

Step	Procedure
8	<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Status panel ribbon cable is delicate. Use caution when lifting cover and disconnecting cable to prevent damage to status panel cable.</p> <p>Carefully raise cover approximately 6 inches and disconnect status panel ribbon cable from J4 on 1.5 KVA Inverter Board 1A4A4.</p>
9	Lift cover from off Power Supply Assembly 1A4.
<b>POST-SERVICE: INSTALLING UPS COVER AND APPLYING POWER TO UPS</b>	
	<p>Tools required: Small flat-tipped screwdriver No. 2 Phillips screwdriver</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that facility power is removed from ACU and that cable W030-P1 is disconnected from Battery Box 1A8 before performing maintenance on UPS. Death or severe injury may result if power is not completely removed from UPS prior to maintenance activities.</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Status panel ribbon cable is delicate. Use caution when connecting cable and lowering cover to prevent damage to status panel cable. Ribbon connector is not keyed. Ensure that pin 1 on cable mates with pin 1 on board.</p>
1	While holding cover approximately 6 inches above its normal position, carefully connect status panel ribbon cable to connector J4 on 1.5 KVA Inverter Board 1A4A4. Pin 1 on ribbon connector is marked with ink dot or other marking. Ensure that this mates with pin 1 of inverter board.
2	Lower cover into position on Power Supply Assembly 1A4, taking care not to disturb or pinch status panel ribbon cable.
3	Secure cover to Power Supply Assembly 1A4 by installing six screws and washers in bottom front and top rear of cover.
4	Release locks on power supply assembly slide rails and slide assembly back into ACU cabinet.
5	Using screws, lockwashers, and flat washers, secure power supply assembly drawer to ACU cabinet.
6	On UPS Status Panel Assembly 1A4A1, ensure that OUTPUT POWER switch is set to OFF (0) position.
7	Connect battery cable W030-P1 to connector J1 on Battery Box 1A8.
8	Apply facility power to ACU cabinet.

Table 2.5.7. UPS Fault Isolation (62828-90338-10 or 62828-90338-20)

Step	Symptom	Checks/Corrective Actions												
1	UPS will not start.	<p>Line cord is not connected. Connect line cord.</p> <p>UPS power switch is OFF. Turn switch ON.</p> <p>Wall socket is dead. Test wall socket. Nominal input voltage is too high or too low for voltage setting.</p> <p>DIP Switch Settings (UPS 62828-90338-10 only)</p> <table> <tr> <td><u>Voltage</u></td><td><u>S1</u></td><td><u>S2</u></td></tr> <tr> <td>127</td><td>ON</td><td>OFF</td></tr> <tr> <td>120</td><td>OFF</td><td>OFF (Default)</td></tr> <tr> <td>110</td><td>OFF</td><td>ON</td></tr> </table> <p>Using multimeter, check input voltage and set DIP switches (UPS 62828-90338-10 only) properly in accordance with the above table.</p> <p>Battery fuse or circuit is open.</p> <p>Turn UPS power switch to OFF.</p> <p>Replace battery fuse or set circuit breaker to ON.</p> <p>Turn UPS power switch to ON.</p>	<u>Voltage</u>	<u>S1</u>	<u>S2</u>	127	ON	OFF	120	OFF	OFF (Default)	110	OFF	ON
<u>Voltage</u>	<u>S1</u>	<u>S2</u>												
127	ON	OFF												
120	OFF	OFF (Default)												
110	OFF	ON												
2	Alarm continues after ALARM SILENCE button is pushed.	<p>Overheat condition likely.</p> <p>On UPS, set power switch to off position.</p> <p>Inspect inside of ACU cabinet to ensure proper ventilation around UPS and that ACU blower is operating. Replace if necessary.</p> <p>Allow UPS to cool.</p> <p>Set power switch to on position. If UPS fails to turn on and alarm continues, set UPS power switch to off position and proceed to step 3.</p>												
3	With UPS cool, ALARM continues when facility power is applied to ACU. UPS does not output power.	Ensure that connector P1 is securely attached to UPS. Attempt to operate UPS again by setting UPS power switch to on position.												
4	Battery service LED is red.	Replace batteries BT1 through BT4. If problem persists, replace UPS.												
5	Top LED above load symbol is solid red.	<p>Determine if load(s) is defective or too many loads are connected to the UPS.</p> <p>Overload condition because of excessive current.</p>												
6	All LED's above load symbol are on.	<p>High dc charging voltage.</p> <p>Turn UPS off and disconnect all loads connected to UPS (modem power supply, ACU DC#1, ACU DC #2, GTA Radio, and Codex modem). Connect loads one at a time back into UPS and turn power back on after each one is plugged in until problem returns. If problem persists, remove and replace UPS.</p>												
7	Red LED (top or bottom) above ac input voltage symbol is lit.	Line voltage is either too high or too low. UPS in battery operation. Correct input voltage if possible or be prepared to lose power to load in approximately 2 to 5 minutes after impending low battery LED turns on.												

Table 2.5.7. UPS Fault Isolation (62828-90338-10 or 62828-90338-20) - CONT

Step	Symptom	Checks/Corrective Actions
8	Red LED (top or bottom) above ac input symbol is flashing.	Line voltage has returned to normal, but RESET was not pushed.  Wait until power returns to normal, then press RESET.

2.5.3.3 **VME Card Rack Check.** The ACU VME cards page displays overall status of the ACU card rack boards. The ASOS is configured with redundant hardware for increased system availability. The technician must examine the maintenance log periodically to replace redundant faulty units to reduce the possibility of redundant malfunctions. When a single board is identified as a faulty FRU, it must be replaced. Failure of all or multiple boards indicates that a failure on any board tied to VMEbus could exist. This is a catastrophic failure and requires the technician to isolate the malfunctioning board through board removal and replacement. Table 2.5.8 provides procedures to isolate the faulty FRU in the event of such a failure.

Table 2.5.8. Card Rack Assembly Fault Isolation Procedures

Step	Procedure
1	Remove power from system by setting UPS POWER switch to OFF (0) position and remove facility power from ACU cabinet. Visually inspect both front and rear of Card Rack Assembly 1A2 for damage, loose power connections, etc.
	<b>NOTE</b> Reference paragraph 2.5.4 for the proper removal and installation procedures for the card rack circuit boards. Refer to paragraph 2.5.8 for proper jumper settings.
2	Remove CPU B (1A2A2) from card rack. At the rear of card rack, install jumpers across A2-IACK (slot 2, row A, pins 21 and 22).
3	Apply facility power to ACU cabinet and set UPS POWER switch to ON (1) position. If system initializes properly, CPU B is suspect. Verify jumpers on board and reinstall to confirm board is bad. If system does not initialize properly, proceed to step 4.
4	Replace CPU A (1A2A1). Apply facility power to ACU cabinet and set UPS POWER switch to ON (1) position. If system initializes properly, CPU A is suspect. Verify jumpers on board and reinstall to confirm board is bad. If system does not initialize properly, proceed to step 5.
5	Replace Memory Board 1A2A3. Apply facility power to ACU cabinet and set UPS POWER switch to ON (1) position. If system initializes properly, Memory Board 1A2A3 is suspect. Remove J22 on suspect board for 30 seconds and reinstall jumper. Verify jumpers on board and reinstall to confirm board is bad. If system does not initialize properly, proceed to step 6.
6	One at a time, replace each SIO board in slots A4 through A21 and apply power to system. If system initializes, board most recently replaced is suspect. Verify jumpers are set correctly on suspect SIO and reinstall to confirm board is bad. If system fails to initialize, card rack itself is bad or multiple failures exist.

**2.5.3.4 ACU/DCP Communication System Checks.** The communication link between the ACU and the DCP can be either via rf modems or line drivers. For Class II systems, redundant hardware is used to increase system availability. The ACU CST continually monitors the status of the communication link between the ACU and the DCP. When the ACU is requesting sensor weather data from the DCP, it makes up to three attempts to communicate before logging a failure. For example, if the DCP does not respond to the first request, the ACU requests a second time. If the DCP still does not respond, the ACU requests a third time. If the DCP still fails to respond, a communications failure is noted and the requested data are lost. When the ACU is requesting other types of data (DCP CST results, sensor CST results, etc), only one request is made. If the DCP fails to respond, a failure is logged and no retry is made. The status of the link is reported on the ACU/DCP COMMS page at the OID. Also, when malfunctions are detected, error messages are printed on the printer and entered into the maintenance log. The following paragraphs describe checks of the ACU/DCP communications link.

**2.5.3.4.1 RF Communications.** In the Class II system, the primary (A or B) rf modem in the ACU maintains communication with the primary CPU/rf modem set (A or B) in the DCP. Every minute, the ACU checks its secondary modem to ensure that it can communicate with the DCP. If the ACU primary or secondary rf modem cannot communicate with the DCP, then an error message is printed and entered into the maintenance log, and an F is indicated for the modem on the ACU/DCP COMMS page. Because these are not sensor weather data, no retries are made before logging the failure (as described above).

The ACU can determine the status of the current primary CPU/rf modem link in the DCP and display this status on the ACU/DCP COMMS page on the OID. However, because the DCP's secondary link is not in use, the ACU cannot determine its status. As such, it is normal for the ACU/DCP COMMS status page to indicate P (pass) for the primary DCP link and \* (not yet tested) for the secondary link. If the current DCP primary link fails, the DCP will automatically reset and the other link becomes the new primary link (see below). In this case, an ACU/DCP COMMS FAILURE message is entered in the maintenance log and the failure of the first link is noted on the ACU/DCP COMMS page. The status for the new primary link will be shown as P on the ACU/DCP COMMS page (assuming that the new link is operational).

ACU/DCP communications are half-duplex (one way at a time). The ACU polls the DCP for data, and the DCP responds. The DCP never initiates a communication. In the event that the DCP does not receive any ACU communications for a period of 2 minutes and 40 seconds, the DCP resets itself. When this occurs, the former secondary CPU initializes itself as the new primary CPU. When this CPU receives a synchronization message from the ACU (transmitted once per minute at second #59), it sends a message to the ACU that it has switched systems and reset. A message DCP # \_\_\_\_ HAS RESET TO THE BOOT PROMS is printed on the printer and is entered into the maintenance log. When the DCP receives the next synchronization message from the ACU, the DCP completes its initialization and begins normal operation with the new primary CPU/rf modem set.

In a configuration with more than one DCP, the ACU examines the status of all ACU/DCP links in identifying the source of the failure. That is, a loss of communications with all DCP's indicates that the problem is in the ACU. A loss of communications with a single DCP in the multiple configuration indicates that the fault lies in the failing DCP.

When a complete communication breakdown occurs in a single DCP system, the technician must determine whether the failure is in the ACU or the DCP. This is most easily accomplished using an in-line rf power meter to determine if the ACU and the DCP are transmitting from their respective rf modems. Because the DCP will not transmit anything unless it first receives an inquiry from the ACU, the ACU transmissions should be checked first.

Table 2.5.9 provides a list of ACU/DCP communication symptoms and references the technician to additional procedures that may be used to isolate rf system faults. Procedures are provided for both Class I and Class II ACU's and DCP's.

**2.5.3.4.2 Line Driver Communications.** For a line driver communications link, the system performs the same checks and issues the same error messages. The operation of the ACU/DCP COMMS page is the same. Because there are no rf antennas in a line driver system, the technician should carefully check all connections for the ACU-DCP cable before replacing equipment in either cabinet.

#### NOTE

Normally, a system built with UDS D19.2 line drivers continues to operate with the line drivers until sufficient spares can no longer be obtained. When this occurs, the entire site (ACU and DCP) must be modified to operate with Motorola DDS/MR64 line drivers. Two line drivers are required to update a Class I system. Four line drivers are required to upgrade a Class II system. All UDS line drivers removed from a system must be returned to the National Reconditioning Center.

When a problem is suspected with ACU or DCP line drivers, the technician should make the following checks of the line drivers.

- a. Ensure that power is applied to the line driver. If not, determine reason for power interruption to line driver.
- b. Check for proper connection of RS-232 and telephone cables to line driver.
- c. For the D19.2 line drivers perform the following:
  - (1) Ensure that front panel switch on each line driver is in DATA position.
  - (2) Ensure that TM indicator on front panel of line driver is not illuminated or blinking. If TM indicator is on or blinking perform the following:
    - (a) Ensure that all ACU and DCP line driver rotary switches are in DATA position.
    - (b) Disconnect RS-232 cable and telephone cable from line driver.
    - (c) Temporarily remove power from line driver and reapply power (in ACU, remove it from modem rack and then insert it).
    - (d) If indicator does not extinguish, replace line driver. If problem is not corrected, replace associated line driver in other cabinet.
- d. For the DDS/MR64 line drivers perform the following:
  - (1) Ensure that "ERROR" is not displayed on each line driver LCD. If LCD displays "ERROR" perform the following:
    - (a) Disconnect RS-232 cable and telephone cable from line driver.

- (b) Temporarily remove power from line driver and reapply power (in ACU, remove it from modem rack and then insert it).
- (c) If indicator does not extinguish, refer to paragraph 2.5.3.4 and verify line driver configuration.
- (d) If “ERROR” is still displayed on LCD, replace line driver. If problem is not corrected, replace associated line driver in other cabinet.

**Table 2.5.9. RF Failure Symptoms**

Symptom	Corrective Action
ACU loses communication with all DCP's in multiple-DCP system.	a. Check ACU rf system: Table 2.5.10 (Class II) Table 2.5.11 (Class I) b. Replace ACU antenna.
ACU loses communication with one DCP in a multiple-DCP system.	a. Check DCP rf system: Table 2.5.12 (Class II) Table 2.5.13 (Class I) b. Replace DCP antenna.
ACU loses communication with DCP in single-DCP system.	a. Check ACU rf system: Table 2.5.10 (Class II) Table 2.5.11 (Class I) b. Check DCP rf system: Table 2.5.12 (Class II) Table 2.5.13 (Class I) c. Replace DCP antenna. d. Replace ACU antenna.

**Table 2.5.10. ACU RF Communication Checkout Class II**

Step	Test	Corrective Action
<p style="text-align: center;"><b>NOTE</b></p> <p>This procedure disables one ACU rf modem (A or B) while testing the other. This procedure must be performed twice (once with only rf modem A enabled and once with rf modem B enabled) to fully test the ACU communication systems.</p> <p>Throughout the procedure, inspect all applicable rf cables and connections as possible source of failure.</p>		
1	Using an rf scanner, select site transmit frequency. Adjust squelch and volume and verify that polling tone is generated by the ACU radio.	If ACU is transmitting, check DCP communications. Refer to table 2.5.12.
2	At OID (from the 1-minute display), press REVUE-SITE-CONFIG-COMMS keys to select communications configuration (ACU serial communication) page (Figure 1.3.41).	

Table 2.5.10. ACU RF Communication Checkout Class II -CONT

Step	Test	Corrective Action
3	Using CHANGE function, disable one of the two ACU-DCP links (A or B).	
4	At ACU I/O Panel Assembly 1A9, install an in-line rf power meter between the ACU antenna cable and ANTENNA output connector J39.	
5	Watch the rf power meter to ensure that the ACU transmits at least once per minute (synchronization messages are sent out during second 59 each minute).	<p>If ACU is not transmitting, proceed with step 6.</p> <p>If ACU is transmitting at least once per minute, reconnect cable to ANTENNA connector. Then insert power meter in line at connector at base of ACU antenna. If transmissions are not detected at the antenna, then problem is in cabling from ACU to antenna. If transmissions are still detected at the antenna, then problem is in ACU antenna or in DCP.</p>
6	Remove rf power meter and reconnect antenna cable to ANTENNA connector J39.	
7	At ACU RF/Pressure Mounting Shelf 1A6, install rf power meter between output of rf modem switch 1A6S1 and output cable W012.	
<p style="text-align: center;"><b>NOTE</b></p> <p>Output coaxial cable is an FRU and connections should be checked before replacing other FRU's.</p>		
8	Watch the rf power meter to ensure that the ACU transmits at least once per minute.	<p>If ACU is transmitting at least once per minute, check output coaxial cable and replace rf surge protector 1A9J39 on I/O Panel Assembly 1A9.</p> <p>If ACU is not transmitting, proceed with step 9.</p>
9	Remove rf power meter and reconnect cable to rf modem switch S1.	
10	Install rf power meter in line at the output BNC connector of currently enabled rf modem. Ensure that modem transmits at least once per minute.	If modem is not transmitting, continue with step 11. If modem is transmitting, proceed to step 12.
11	Insert RS-232 tester in line at connector J1 of enabled rf modem. Verify activity on TxD, RTS, and CTS signals at input to rf modem.	<p>If RTS signal is not active at least once per minute, replace SIO board corresponding to enabled modem (SIO #2 for modem A, SIO #3 for modem B).</p> <p>If RTS is active and CTS is not, replace failing rf modem.</p> <p>If RTS and CTS are active, but TxD signal is not active at least once per minute, replace SIO board corresponding to failing modem.</p> <p>If RTS, CTS, and TxD signals are all active, replace failing modem.</p>

Table 2.5.10. ACU RF Communication Checkout Class II -CONT

Step	Test	Corrective Action						
12	<p>Using DMM, ensure correct logic level between rf modem switch terminals 1A6S1-TTL and S1-COM as follows:</p> <table><tr><td>Enabled <u>Modem</u></td><td><u>S1-TTL</u></td></tr><tr><td>A</td><td>Logic 0 (0.0 to 1.0 vdc)</td></tr><tr><td>B</td><td>Logic 1 (3.0 to 5.0 vdc)</td></tr></table>	Enabled <u>Modem</u>	<u>S1-TTL</u>	A	Logic 0 (0.0 to 1.0 vdc)	B	Logic 1 (3.0 to 5.0 vdc)	<p>If voltage is not correct for enabled radio, replace DIO board 1A2A15.</p> <p><b>NOTE</b></p> <p>Coaxial cable at output of rf modem is an FRU and connection should be checked.</p> <p>Check coaxial cable between rf modem and rf modem switch.</p> <p>If voltage is correct and cable looks good, replace rf modem switch 1A6S1.</p>
Enabled <u>Modem</u>	<u>S1-TTL</u>							
A	Logic 0 (0.0 to 1.0 vdc)							
B	Logic 1 (3.0 to 5.0 vdc)							
13	Remove all test equipment and reconnect all cables.							
14	At ACU serial communications page of OID, use CHANGE function to enable the ACU-DCP link (A or B) previously disabled.							

Table 2.5.11. ACU RF Communication Checkout Class I

Step	Test	Corrective Action
<p><b>NOTE</b></p> <p>Throughout the procedure, inspect all applicable rf cables and connections as possible source of failure.</p>		
1	Using an rf scanner, select site transmit frequency. Adjust squelch and volume and verify that polling tone is generated by the ACU radio.	If ACU is transmitting, check DCP communications. Refer to table 2.5.13.
2	At ACU I/O Panel Assembly 1A9, install an in-line rf power meter between the ACU antenna cable and ANTENNA output connector J39.	
3	Watch the rf power meter to ensure that the ACU transmits messages at least once per minute (synchronization messages are sent out during second 59 each minute).	<p>If ACU is not transmitting, proceed with step 4.</p> <p>If ACU is transmitting at least once per minute, reconnect cable to ANTENNA connector. Then insert power meter in line at connector at base of ACU antenna. If transmissions are not detected at the antenna, then problem is in cabling from ACU to antenna. If transmissions are still detected at the antenna, then problem is in ACU antenna or in DCP.</p>
4	Remove rf power meter and reconnect antenna cable to ANTENNA connector J39.	
5	At ACU RF/Pressure Mounting Shelf 1A6, install rf power meter between output BNC connector of RF Modem 1A6A4 and output cable W032.	
<p><b>NOTE</b></p> <p>Output coaxial cable is an FRU and connections should be checked before replacing other FRU's.</p>		



**Table 2.5.11. ACU RF Communication Checkout Class I -CONT**

Step	Test	Corrective Action
6	Watch the rf power meter to ensure that the rf modem transmits at least once per minute.	<p>If the rf modem is transmitting at least once per minute, check coaxial cable, then replace rf surge protector 1A9J39 on I/O Panel Assembly 1A9.</p> <p>If rf modem is not transmitting, proceed with step 7.</p>
7	Insert RS-232 tester in line at connector J1 of RF Modem 1A6A4. Verify activity on TxD, RTS, and CTS signals at input to rf modem.	<p>If RTS signal is not active at least once per minute, replace SIO board 2.</p> <p>If RTS is active and CTS is not, replace failing rf modem.</p> <p>If RTS and CTS are active, but TxD signal is not active at least once per minute, replace SIO board 2.</p> <p>If RTS, CTS, and TxD signals are all active, replace RF Modem 1A6A4.</p>

**Table 2.5.12. DCP RF Communication Checkout Class II**

Step	Test	Corrective Action
<p style="text-align: center;"><b>NOTE</b></p> <p>This procedure tests one rf link (A or B) at a time. This procedure must be performed twice (once for link A and once for link B) to fully test the DCP communications system.</p> <p>Examine PASS indicators on CPU's A and B to determine which CPU/rf modem link is currently primary (PASS indicator is illuminated steadily on primary).</p> <p>Throughout this procedure, the technician may have to manually reset the DCP to maintain primary assignment on link being tested. The DCP is manually reset by pressing the RESET switch on the CURRENT primary CPU. For example, the technician can test rf modem B when the A CPU/modem is currently primary by resetting the A CPU, which causes the B CPU to take over primary assignment. RF modem B may then be tested.</p> <p>Throughout the procedure, inspect all applicable rf cables and connections as possible source of failure.</p>		
1	Select link (A or B) to be tested first. If necessary, reset DCP to toggle primary assignment to selected link under test.	
2	Examine PASS indicator on opposite (secondary) CPU. This indicator should flash after DCP receives synchronization message from ACU (may have to wait up to 1 minute for this to occur).	<p>If PASS LED on secondary CPU flashes, link under test is receiving sync message. Proceed to step 8.</p> <p>If PASS LED does not flash (and DCP resets after 2 minutes and 40 seconds), continue with step 3.</p>
3	On selected rf modem under test, insert RS-232 tester in line with cable from CPU and modem connector J1.	
4	Ensure that selected link under test is still primary (press CPU RESET if necessary).	
<p style="text-align: center;"><b>NOTE</b></p> <p>Cable between CPU and rf modem is an FRU and should be checked before replacing other FRU's.</p>		

Table 2.5.12. DCP RF Communication Checkout Class II -CONT

Step	Test	Corrective Action
5	5 Verify activity of RxD signal on RS-232 tester at least once per minute (ACU sends synchronization messages during second 59 each minute).	If RxD signal is active, check cable between CPU and rf modem under test, then replace CPU.  If RxD signal is not active, continue with step 6.
6	Using DMM, ensure correct logic level between rf modem switch terminals A1A5S1-TTL (white wire) and S1-COM (black wire) as follows:  <div style="display: flex; justify-content: space-around;"> <div>Link Under Test</div> <div>S1-TTL</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div>A</div> <div>Logic 0 (0.0 to1.0 vdc)</div> </div> <div style="display: flex; justify-content: space-around;"> <div>B</div> <div>Logic 1 (3.0 to5.0 vdc)</div> </div>	If voltage is not correct for current primary link, replace DIO Board A1A2A12.  If voltage is correct, proceed to step 7.
7	Press RESET to toggle primary assignment to opposite CPU/rf modem. Wait to see if ACU/DCP communications resume on opposite link.	If communications resume, fault is due to one of the following:  <div style="list-style-type: none;"> <p>a. Cable between first rf modem and rf modem switch (check connections).</p> <p>b. First rf modem</p> <p>c. RF modem switch</p> </div> If communications do not resume, fault is due to one of the following:  <div style="list-style-type: none;"> <p>a. RF modem switch</p> <p>b. Cabling from DCP antenna to rf modem switch</p> <p>c. RF surge protector A1A3J8</p> <p>d. Both radios failed (or cables between radios and rf modem switch)</p> <p>e. DCP antenna</p> <p>f. ACU antenna</p> </div>
8	On selected rf modem under test, insert RS-232 tester in line with cable from CPU and modem connector J1.	
<b>NOTE</b>		
Cable between CPU and rf modem is an FRU and should be checked before replacing other FRU's.		

Table 2.5.12. DCP RF Communication Checkout Class II -CONT

Step	Test	Corrective Action
9	Ensure that selected link is still primary, and verify activity on RTS, CTS, and TxD signals on RS-232 tester (at least once per minute).	If RTS signal is not active, replace corresponding CPU board.  If RTS is active but CTS is not, replace rf modem.  If RTS and CTS are active but TxD is not, replace corresponding CPU.
10	At output of same rf modem, connect an in-line rf power meter between output BNC connector and output cable.	
11	Ensure that selected link under test is still primary (press CPU RESET if necessary).	
12	Watch the rf power meter to ensure that the rf modem transmits messages at least once per minute.	If rf modem is transmitting, continue with step 13.  If rf modem is not transmitting, replace rf modem.
13	Remove rf power meter and reconnect modem output cable.	
14	Install rf power meter between output of rf modem switch A1A1 and output cable W013.	
15	Ensure that selected link under test is still primary (press CPU RESET if necessary).	
<p style="text-align: center;"><b>NOTE</b></p> <p>Coaxial cable between rf modem and switch is an FRU and should be checked before replacing other FRU's.</p>		
16	Watch the rf power meter and ensure that system transmits from rf modem switch at least once per minute.	If transmissions are indicated, continue with step 17.  If transmissions are not indicated, check coaxial cable, then replace rf modem switch.
17	Remove rf power meter and reconnect rf switch output cable.	
18	At Faraday Box A1A3, install rf power meter between output of rf surge suppressor A3J8 and output cable W010.	
19	Ensure that selected link under test is still primary (press CPU RESET if necessary).	
<p style="text-align: center;"><b>NOTE</b></p> <p>Coaxial cable between rf modem switch and surge suppressor is an FRU and should be checked before replacing other FRU's.</p>		
20	Watch the rf power meter and ensure that system transmits from the rf surge suppressor at least once per minute.	If transmissions are indicated, continue with step 21.  If transmissions are not indicated, replace rf surge suppressor.
21	Remove rf power meter and reconnect cable to surge suppressor.	
22	Insert power meter in line at connector at base of DCP antenna.	

Table 2.5.12. DCP RF Communication Checkout Class II -CONT

Step	Test	Corrective Action
23	Ensure that selected link under test is still primary (press CPU RESET if necessary).	
<b>NOTE</b> Cables between DCP rf surge suppressor and DCP antenna are FRU's and should be checked before replacing other FRU's.		
24	Watch the rf power meter and ensure that system transmits to the antenna at least once per minute.	If transmissions are not indicated at the base of the antenna, then problem is in cabling from surge suppressor to antenna.  If transmissions are indicated, then problem is in the DCP antenna or the ACU antenna.

Table 2.5.13. DCP RF Communication Checkout Class I

Step	Test	Corrective Action
<b>NOTE</b> Throughout the procedure, inspect all applicable rf cables and connections as possible source of failure.		
1	Examine PASS indicator on CPU A1A2A1 to ensure that it is steadily illuminated.	If PASS indicator is not illuminated steadily, press RESET switch on the CPU. If CPU does not initialize, replace CPU.
2	On rf modem A1A5A1, insert RS-232 tester in line with cable from CPU and modem connector J2.	
3	Verify activity of RxD signal on RS-232 tester at least twice per minute.	If RxD signal is active, proceed to step 4.  If RxD signal is not active, fault is due to one of the following: <ul style="list-style-type: none"> <li>a. Cabling/connections from DCP antenna to rf modem</li> <li>b. RF surge protector A3J8</li> <li>c. RF Modem A1A5A1</li> <li>d. DCP antenna</li> <li>e. ACU antenna</li> </ul>
<b>NOTE</b> Cable between CPU and rf modem is an FRU and should be checked before replacing other FRU's.		
4	Verify activity on RTS, CTS, and TxD signals on RS-232 tester (at least twice per minute).	If RTS signal is not active, replace CPU A1A2A1.  If RTS is active, but CTS is not, replace rf modem.  If RTS and CTS are active, but TxD is not, replace CPU.
5	At output of rf modem, connect an in-line rf power meter between output BNC connector and output cable.	

**Table 2.5.13. DCP RF Communication Checkout Class I -CONT**

Step	Test	Corrective Action
6	Watch the rf power meter to ensure that the rf modem transmits messages at least once per minute.	If rf modem is transmitting, continue with step 7. If rf modem is not transmitting, replace rf modem.
7	Remove rf power meter and reconnect modem output cable.	
8	At Faraday Box A1A3, install rf power meter between output of rf surge suppressor A3J8 and output cable W010.	
<p style="text-align: center;"><b>NOTE</b></p> <p>Coaxial cable between rf modem and surge suppressor is an FRU and should be checked before replacing other FRU's.</p>		
9	Watch the rf power meter and ensure that system transmits from the rf surge suppressor at least twice per minute.	If transmissions are indicated, continue with step 11. If transmissions are not indicated, replace rf surge suppressor.
10	Remove rf power meter and reconnect cable to surge suppressor.	
11	Insert power meter in line at connector at base of DCP antenna.	
<p style="text-align: center;"><b>NOTE</b></p> <p>Cables between DCP rf surge suppressor and DCP antenna are FRU's and should be checked before replacing other FRU's.</p>		
12	Watch the rf power meter and ensure that system transmits to the antenna at least twice per minute.	If transmissions are not indicated at the base of the antenna, then problem is in cabling from surge suppressor to antenna.  If transmissions are indicated, then problem is in the DCP antenna or the ACU antenna.

**2.5.3.5 Serial I/O Board Checks.** The ACU continuous self-test (CST) checks the operation of the SIO boards once per minute. A LOOPBACK test and a TRANSMIT ERROR test is performed on each of the four ports of each SIO board. When a failure is discovered, an error message is printed on the printer and entered into the maintenance log. The error message identifies the SIO board and port, the type of test failed, and gives instructions to replace the board. Also, an F indication is displayed on the appropriate ACU SIO page at the OID. For this type of SIO board failure, the technician need only replace the identified board to repair the system.

In addition to the definitive SIO board failures described above, general communications failures may occur between the CPU and some device (peripheral, local sensor, or user). These failures may be the fault of an SIO board, but they may also be the fault of the device, or equipment in between the SIO and the device (e.g., telephone modems, cable connections, etc). Often the CPU itself may detect such communication failures. In such case, a general error message, such as PRIMARY OID COMMUNICATION FAILURE or AFOS PHONE PORT DOWN is printed on the printer and entered into the maintenance log.

When such general loss of communication occurs, the technician should first access the ACU serial communications page on the OID and determine to which SIO port the failing device is assigned. The ACU functional diagrams and the descriptions of Section IV of this Chapter should be referenced to determine all of the equipment cables between the corresponding SIO board and the device which lost communications. The technician should then inspect all cable connections associated with the failing port.

If all cable connections appear to be good and the port is still not operating, an RS-232 test box can be used

to check communication between the SIO port and the next device in line with it (e.g. modem, printer, OID, etc). The RS-232 test box is inserted between the connector for the failing SIO Port and the device which lost communications.

When using the RS-232 test box, the technician must verify the activity of the applicable RS-232 signals. In all cases, the transmit data (TxD) and receive data (RxD) signals must be active to indicate correct communication. Depending on the device being investigated, two handshaking signals may also be required: request to send (RTS) and clear to send (CTS). In order to determine whether the RTS and CTS signals should be present for a given application, the technician must access the ACU serial communications page at the OID, select the port that is being investigated, and look at the HANDSHAKING field. This field will indicate either NONE or CTS/RTS. If CTS/RTS is indicated, the technician must ensure that these signals are present on the RS-232 tester. If NONE is indicated, the technician need only verify the TxD and RxD signals.

**2.5.3.6 Diagnostics.** The ACU CST runs continuously in the background of the ASOS operating software as described in Chapter 1. The CST completes a check of the system every minute with the exception of the modem rack. The CST checks each of the individual telephone modems in the modem rack once every 7 minutes, as long as the modems are not busy (testing a busy modem would disrupt communication). The test data received via the diagnostic program are displayed on the technician interface display pages, which are described in Chapter 1, Section III. If the CST detects a failure, the unit is tagged as faulty and a message is entered into the maintenance log. Where redundant hardware is present (i.e., CPU's, rf modems, pressure sensors, or line drivers), the faulty FRU is bypassed via software and the failure is entered into the maintenance log and a maintenance flag (\$) is added to the next METAR.

## 2.5.4 REMOVAL AND INSTALLATION PROCEDURES

**2.5.4.1 General.** The following chart is provided to facilitate safe and efficient removal of assemblies found to be defective through performance of the preventive maintenance and troubleshooting procedures. Procedures provided for replacement of duplicate assemblies, such as the VME cards and dc power supplies, are sufficient for maintenance of all units and are described for one assembly only. Only those assemblies and subassemblies whose replacement procedures are not obvious have been provided in this chapter. The removal/installation sequence of attaching hardware (screws, washers, nuts, etc) is reflected by the relative order of their presentation in the applicable step.

Unit to Be Replaced	Removal/Installation/ Table reference
Modem/line driver rack power supply	2.5.14
RF modem	2.5.15
RF switch	2.5.16
VME card rack circuit board	2.5.17
Modem/line driver rack circuit board	2.5.18
Power supply assembly filter board	2.5.19
Power supply assembly transformer	2.5.20
Power supply assembly fuse	2.5.21
Power supply assembly RS-232 board	2.5.22
Power supply assembly inverter board	2.5.23
Power supply assembly status panel	2.5.24
Power supply assembly OUTPUT POWER switch	2.5.25
Power supply assembly circuit breaker	2.5.26

Unit to Be Replaced	Removal/Installation/ Table reference
DC power supply	2.5.27
DC power supply fan connector board	2.5.28
Blower	2.5.29
Battery box and battery	2.5.30
Uninterruptible power supply	2.5.31
ACU tie-downs	2.5.32
Pressure sensor	See Chapter 8
GTA Radio	See Chapter 12
Codex modem	See Chapter 13

**2.5.4.2 Orienting DB-25 Adapters.** On I/O Panel 1A9, DB-25 adapters J22 through J31 and J42 (p/n 62828-90148-1) are combination EMI filter/surge suppressor devices. The manufacturer of these adapters places its part number label on the surge suppressor end of the device. When installing a new DB-25 adapter, the maintenance technician must orient the new adapter so that its surge suppressor (label) end faces the outside of the ACU cabinet (EMI end is inside cabinet).

**Table 2.5.14. Modem/Line Driver Rack Power Supply Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: Small flat-tipped screwdriver	
<b><u>WARNING</u></b>	
Death or severe injury may result if power is not removed from ACU prior to maintenance activities. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.	
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
3	Disconnect ac power cord from rear of modem/line driver rack.
4	Using small flat-tipped screwdriver, loosen power supply holding screw on rear of modem/line driver rack.
5	Lower modem/line driver rack hinged front panel.
<b><u>CAUTION</u></b>	
Power supply module is heavy. Grasp handle with one hand while supporting bottom of power supply module with other hand.	
6	Grasp power supply handle and slide out of modem/line driver rack.
<b>INSTALLATION</b>	
Tools required: Small flat-tipped screwdriver	
<b><u>WARNING</u></b>	
Death or severe injury may result if power is not removed from ACU prior to maintenance activities. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.	
1	Verify that UPS POWER switch is set to 0 (off) position.

**Table 2.5.14. Modem/Line Driver Rack Power Supply Removal and Installation - CONT**

Step	Procedure
2	Verify that facility power is removed from ACU cabinet.
3	Position power supply in guide strips and slide into modem/line driver rack.
4	Close hinged front panel.
5	Using small flat-tipped screwdriver, tighten power supply holding screw on rear of modem/line driver rack.
6	Connect ac power cord to modem/line driver rack.
7	Apply facility power to ACU cabinet.
8	Set UPS POWER switch to 1 (on) position.

**Table 2.5.15. RF Modem Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
<p>Tools required:</p> <p>No. 1 Phillips screwdriver</p> <p>No. 2 Phillips screwdriver</p> <p>Small flat-tipped screwdriver</p> <p><b>CAUTION</b></p> <p>Damage to rf modems may result if power is not removed from ACU prior to removal or installation. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.</p> <p><b>NOTE</b></p> <p>Refer to paragraph 2.4.3.4.2 for replacement rf modem information.</p>	
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
<b>WARNING</b>	
<p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 are safety-critical devices. Pressure sensors may output erroneous readings if damaged or if plastic vent tubing is damaged or obstructed. Throughout this procedure, exercise caution to avoid damage to pressure sensors and vent tubing.</p>	
3	Using No. 2 Phillips screwdriver, remove two screws, lockwashers, and flat washers securing rf/pressure mounting shelf slide mount to frame. Slide mounting shelf out until slides lock in fully extended position.
4	Using figure 2.1.7, locate rf modem to be removed.
5	At rf modem to be removed, use small flat-tipped screwdriver to remove D connectors (two for AAI model, one for Motorola and Johnson Data models) from rf modem.
6	Remove BNC connector from modem rf output connector. If modem being removed is Johnson Data model then remove SMAM-to-BNCF adapter.

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Table 2.5.15. RF Modem Removal and Installation - CONT

Step	Procedure
7	<p>Using No. 1 Phillips screwdriver, remove two screws, lockwashers, and flat washers from the bottom of mounting shelf that secure rf modem to shelf. Remove rf modem from mounting shelf.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>When an AAI modem (62828-90013-XX) fails, and a replacement AAI modem is not available, ASN S100-FMK18886 must be ordered to replace the modem with the Motorola modem (62828-90315-XX). AAI modems cannot be replaced with the Johnson Data modems (62828-40506-X ).</p> <p>When a Motorola modem (62828-90315-XX) fails and spare Motorola modems are not available, a Johnson Data modem (62828-40506-X), an adapter cable (62828-42110-10), and a SMAM-to-BNCF adapter must be ordered to replace the failing rf modem.</p>
<b>INSTALLATION</b>	
<p>Tools required:</p> <p>No. 1 Phillips screwdriver</p> <p>No. 2 Phillips screwdriver</p> <p>Small flat-tipped screwdriver</p> <p style="text-align: center;"><b>CAUTION</b></p> <p>Damage to rf modems may result if power is not removed from ACU prior to removal or installation. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.</p>	
1	Verify that UPS POWER switch is set to 0 (off) position.
2	Verify that facility power is removed from ACU cabinet.
2.1	If rf modem to be installed is a Johnson Data model, ensure that bottom mounting plate is removed from the modem. If necessary, remove bottom mounting plate using a No. 2 Phillips screwdriver and discard.
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 are safety-critical devices. Pressure sensors may output erroneous readings if damaged or if plastic vent tubing is damaged or obstructed. Throughout this procedure, exercise caution to avoid damage to pressure sensors and vent tubing.</p>	
3	Using No. 2 Phillips screwdriver, remove two screws, lockwashers, and flat washers securing rf/pressure mounting shelf slide mount to frame. Slide mounting shelf out until slides lock in fully extended position.
4	Position replacement rf modem on mounting shelf and use No. 1 Phillips screwdriver to install two screws, lockwashers, and flat washers securing rf modem to mounting shelf. Screws are installed from bottom side of mounting shelf.
4.1	If replacement modem is a Johnson Data modem (62828-40506-X), install adapter cable (62828-42110-10) and a SMAM-to-BNCF adapter to rf modem.
5	Install BNC connector to modem rf output connector (or to SMAM-to-BNCF adapter).
6	Using small flat-tipped screwdriver, install and secure power/signal D connectors to rf modem.

Table 2.5.15. RF Modem Removal and Installation - CONT

Step	Procedure
	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 may output erroneous values if plastic vent tubing binds or crimps when shelf is closed. Exercise caution when closing shelf to prevent damage to pressure sensor vent tubing.</p>
7	While taking care not to damage or crimp pressure sensor vent tubing, release mounting shelf slide locks and push mounting shelf back into cabinet. After closing shelf, ensure that pressure sensor tubing is properly connected to sensor and to PRESSURE VENT on I/O Panel Assembly 1A9 and is not damaged or crimped.
8	Using No. 2 Phillips screwdriver, install two screws, lockwashers, and flat washers securing mounting shelf to frame.
9	Apply facility power to ACU cabinet.
10	Set UPS POWER switch to 1 (on) position.

Table 2.5.16. RF Switch Removal and Installation

Step	Procedure
	<p style="text-align: center;"><b>REMOVAL</b></p> <p>Tools required: No. 1 Phillips screwdriver No. 2 Phillips screwdriver</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Equipment damage may occur if power is not removed from ACU prior to removal or installation. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed.</p>
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 are safety-critical devices. Pressure sensors may output erroneous readings if damaged or if plastic vent tubing is damaged or obstructed. Throughout this procedure, exercise caution to avoid damage to pressure sensors and vent tubing.</p>
3	Using No. 2 Phillips screwdriver, remove two screws, lockwashers, and flat washers securing rf/pressure mounting shelf slide mount to frame.
4	At rf switch, tag and remove three BNC connectors.
5	Disconnect rf switch in-line connector (A6-P1) from ACU harness connector P92.
6	Using No. 1 Phillips screwdriver, remove two screws, flat washers, and lockwashers securing rf switch to standoffs. Remove rf switch.

Table 2.5.16. RF Switch Removal and Installation - CONT

Step	Procedure
<b>INSTALLATION</b>	
<p>Tools required:</p> <p>No. 1 Phillips screwdriver</p> <p>No. 2 Phillips screwdriver</p> <p>Large flat-tipped screwdriver</p> <p><b><u>CAUTION</u></b></p> <p>Equipment damage may occur if power is not removed from ACU prior to removal or installation. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed.</p>	
1	Verify that UPS POWER switch is set to 0 (off) position.
2	Verify that facility power is removed from ACU cabinet.
<p><b><u>WARNING</u></b></p> <p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 are safety-critical devices. Pressure sensors may output erroneous readings if damaged or if plastic vent tubing is damaged or obstructed. Throughout this procedure, exercise caution to avoid damage to pressure sensors and vent tubing.</p>	
3	Using No. 2 Phillips screwdriver, remove two screws, lockwashers, and flat washers securing rf/pressure mounting shelf slide mount to frame.
4	Position rf switch near standoffs at rear of rf/pressure mounting shelf.
5	Using No. 1 Phillips screwdriver, install two screws, flat washers, and lockwashers securing rf switch to standoffs.
6	Connect rf switch in-line connector (A6-P1) to ACU harness connector P92.
7	Using markers as a guide, install three BNC connectors on rf switch.
<p><b><u>WARNING</u></b></p> <p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 may output erroneous values if plastic vent tubing binds or crimps when shelf is closed. Exercise caution when closing shelf to prevent damage to pressure sensor vent tubing.</p>	
8	While taking care not to damage or crimp pressure sensor vent tubing, release mounting shelf slide locks and push mounting shelf back into cabinet. After closing shelf, ensure that pressure sensor tubing is properly connected to sensor and to PRESSURE VENT on I/O Panel Assembly 1A9 and is not damaged or crimped.
9	Using No. 2 Phillips screwdriver, install two screws, lockwashers, and flat washers securing mounting shelf to frame.
10	Apply facility power to ACU cabinet.
11	Set UPS POWER switch to 1 (on) position.

Table 2.5.17. VME Card Rack Circuit Board Removal and Installation

Step	Procedure
<b>REMOVAL</b>	
	<p>Tools required: Small flat-tipped screwdriver</p> <p><b>CAUTION</b></p> <p>Damage to equipment may result if power is not removed prior to removal or installation. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed.</p> <p>To avoid damage to circuit boards, use proper electrostatic discharge (ESD) handling procedures to include the use of a grounding strap when performing the following procedures.</p>
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
3	Using figure 2.1.3, locate circuit board to be removed.
4	If removing Voice Processor Board 1A2A20 or Voice Recorder/Playback Board 1A2A21, disconnect cable from the front of the boards by exerting an outward force on the cable release tabs located at the top and bottom of the connector.
5	Using small flat-tipped screwdriver, loosen captive screws located at the top and bottom of the board.
	<p><b>CAUTION</b></p> <p>When removing a CPU board from the rack, support the board via the handles. Failure to support the board properly when it releases from the rear connector may result in the board hitting the bottom of the card rack.</p>
6	If the board is equipped with extractor handles, press handles in opposite directions to release the board. If the board does not have extractor handles, gently rock the board while exerting an outward pressure and remove board from the rack.
	<p><b>CAUTION</b></p> <p>Jumper J22 on ACU memory board must be disconnected before shipping or storing board. Failure to comply may result in discharge of battery.</p>
7	If board removed is ACU Memory Board A1A2A3, remove jumper J22 from board. Install jumper on one pin only of J22 for shipping or storage.
<b>INSTALLATION</b>	
	<p>Tools required: Small flat-tipped screwdriver</p> <p><b>CAUTION</b></p> <p>Damage to equipment may result if power is not removed prior to removal or installation. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed.</p> <p>To avoid damage to circuit boards, use proper ESD handling procedures to include the use of a ground strap when performing the following procedures.</p>
1	Verify that UPS POWER switch is set to 0 (off) position.
2	Verify that facility power is removed from ACU cabinet.

**Table 2.5.17. VME Card Rack Circuit Board Removal and Installation -CONT**

Step	Procedure
3	If board being installed is CPU A or B (1A2A1 or 1A2A2) or RS-232 SIO board #2 through #7 (1A2A6 through 1A2A12), configure board jumpers for slot into which it is being installed (paragraph 2.5.6).
	<b>NOTE</b> Jumper J22 on ACU memory board must be properly installed to enable battery backup circuit.
4	If board installed is ACU Memory Board 1A2A3, remove jumper clip from storage position (one pin) of J22 and install across both pins of J22.
5	Holding the board by the handles, position board with the component side to the right and carefully slide board into the card rack on its guides. Align board with the rear connector and press into place.
6	Using small flat-tipped screwdriver, tighten captive screws located at the top and the bottom of the board.
7	If installing Voice Processor Board 1A2A20 or Voice Recorder/Playback Board 1A2A21, connect cable attached to the front of the boards as follows: <ul style="list-style-type: none"> <li>a. Position connector extraction tabs to their fully extended position.</li> <li>b. Locate cable keys and position keys to the right; install cable in the connector.</li> </ul>
8	Apply facility power to ACU cabinet.
9	Set UPS POWER switch to 1 (on) position.

**Table 2.5.18. Modem/Line Driver Rack Circuit Board Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
	<b>NOTE</b> ACU power need not be turned off for a modem/ line driver circuit board interchange. This allows normal operation of ACU during removal and replacement.
1	Using figure 2.1.4, locate circuit board to be removed.
2	Lower modem/line driver rack hinged front panel.
3	Using the handle located at the middle of the board, gently rock board until free from the rear connector. Remove board.
<b>INSTALLATION</b>	
	<b>NOTE</b> ACU power need not be turned off for a modem/ line driver circuit board interchange. This allows normal operation of ACU during removal and replacement.
1	On circuit board being installed, verify that switch settings and jumper installations match those of previously removed board.
2	Position component side of the board to the right and align on the guides, then slide board into slot.
3	Ensure that edge connector of board is aligned with the rack connector, then apply enough pressure to set the board into the rack connector.
4	Close modem/line driver rack hinged front panel.

**Table 2.5.19. Power Supply Assembly Filter Board Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: No. 2 Phillips screwdriver	
<b>WARNING</b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	At 1.5 KVA Filter Board 1A4A3, remove harness connectors from board connectors J7 and J10.
3	Tag and remove five single wires from 1.5 KVA Filter Board 1A4A3.
4	Using Phillips screwdriver, remove four screws, flat washers, and lockwashers securing 1.5 KVA Filter Board 1A4A3 to standoffs.
5	Remove filter board from power supply assembly.
<b>INSTALLATION</b>	
Tools required: No. 2 Phillips screwdriver	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Position 1.5 KVA Filter Board 1A4A3 on standoffs with connectors J7 and J10 on bottom.
3	Using Phillips screwdriver, install four screws, flat washers, and lockwashers securing 1.5 KVA Filter Board 1A4A3 to standoffs.
4	Using tags as a guide, install five wires on 1.5 KVA Filter Board 1A4A3.
5	Install harness connectors on board connectors J7 and J10.
6	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.20. Power Supply Assembly Transformer Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: No. 2 Phillips screwdriver 3/8-inch nut driver	
<b>WARNING</b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Remove power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.20. Power Supply Assembly Transformer Removal and Installation -CONT**

Step	Procedure
2	At 1.5 KVA Inverter Board 1A4A4, tag and remove seven transformer wires with solderless (spade) connectors from spade connectors on inverter board.
3	Using 3/8-inch nut driver, tag and remove three transformer wires from standoffs on 1.5 KVA Inverter Board 1A4A4.
4	Using Phillips screwdriver, remove four screws and flat washers securing transformer to power supply assembly.
	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Transformer is heavy equipment (weighs approximately 45 pounds) and requires two-man or mechanical lift. Failure to comply may result in injury to personnel or damage to equipment.</p>
5	Carefully remove transformer from power supply assembly drawer.
<b>INSTALLATION</b>	
	<p>Tools required: No. 2 Phillips screwdriver 3/8-inch nut driver</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.</p>
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Transformer is heavy equipment (weighs approximately 45 pounds) and requires two-man or mechanical lift. Failure to comply may result in injury to personnel or damage to equipment.</p>
2	Position transformer on power supply assembly with three heavy gauge wires on the right.
3	Using Phillips screwdriver, install four screws and flat washers securing transformer to power supply assembly.
4	Using 3/8-inch nut driver and tags as a guide, install three transformer wires to standoffs on 1.5 KVA Inverter Board 1A4A4.
5	On 1.5 KVA Inverter Board 1A4A4, using tags as a guide, install seven transformer wires to spade connectors on 1.5 KVA Inverter Board 1A4A4.
6	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.21. Power Supply Assembly Fuse Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: Fuse puller	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	Using fuse puller, remove fuse F1 from fuse holder A4XF1.
<b>INSTALLATION</b>	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Install replacement fuse F1 in fuse holder A4XF1.
3	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.22. Power Supply Assembly RS-232 Board Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: Small flat-tipped screwdriver 3/16-inch nut driver	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	Disconnect RS-232 board ribbon connector A4A2-P1 from connector J2 on 1.5 KVA Inverter Board 1A4A4 by grasping connector with thumb and index finger and exerting an upward force on connector.
3	Using small flat-tipped screwdriver, loosen retaining screws on serial port (DB-25) connector (at rear of RS-232 board) and remove connector from RS-232 board.
4	Using 3/16-inch nut driver, remove two lugs (standoffs) securing RS-232 board to power supply assembly chassis.
5	Remove RS-232 board from power supply assembly.



Table 2.5.22. Power Supply Assembly RS-232 Board Removal and Installation -CONT

Step	Procedure
<b>INSTALLATION</b>	
Tools required: Small flat-tipped screwdriver 3/16-inch nut driver	
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.</p>	
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Carefully position RS-232 board in power supply assembly with component side to the right.
3	Using 3/16-inch nut driver, install two lugs (standoffs) securing RS-232 board to power supply assembly chassis.
4	Install RS-232 ribbon board connector A4A2-P1 to connector J2 on 1.5 KVA Inverter Board 1A4A4. Ensure that pin 1 on ribbon connector (marked with ink dot or other marking) mates with pin 1 of Inverter Board 1A4A4.
5	Install connector harness serial port (DB-25) connector to RS-232 board. Using small flat-tipped screwdriver, tighten retaining screws.
6	Install power supply assembly cover in accordance with table 2.5.6.

Table 2.5.23. Power Supply Assembly Inverter Board Removal and Installation

Step	Procedure
<b>REMOVAL</b>	
Tools required: No. 2 Phillips screwdriver 3/8-inch nut driver	
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.</p>	
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	Remove RS-232 ribbon connector A2-P1 from inverter board connector A4J2.
3	Tag and remove 10 wires with solderless (spade) connectors from inverter board terminals.
4	Tag seven wires attached to the four inverter board standoffs.
5	Using 3/8-inch nut driver, remove four nuts, four flat washers, four lockwashers, and seven wires from four inverter board standoffs.
6	Remove four screws, flat washers, lockwashers, and nuts securing mounting bracket to insulator (insulator is located on top of two heat sinks).
7	Using Phillips screwdriver, remove three screws and flat washers securing inverter board to power supply assembly chassis.
8	Carefully slide inverter board forward and remove from power supply assembly.

**Table 2.5.23. Power Supply Assembly Inverter Board Removal and Installation -CONT**

Step	Procedure
<b>INSTALLATION</b>	
Tools required: No. 2 Phillips screwdriver 3/8-inch nut driver	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Carefully position inverter board into card guides, with insulator under mounting bracket.
3	Using Phillips screwdriver, install three screws and flat washers securing inverter board to power supply assembly chassis.
4	Using Phillips screwdriver, install four screws, flat washers, lockwashers, and nuts securing mounting bracket to insulator. Insulator is located on top of two heat sinks.
5	Using 3/8-inch nut driver and tags as a guide, install four nuts, four flat washers, four lockwashers, and seven wires to four inverter board standoffs.
6	Using tags as a guide, install 10 wires with solderless (spade) connectors to inverter board terminals.
7	Install RS-232 connector A2-P1 on inverter board connector A4-J2. Ensure that pin 1 on ribbon connector (marked with ink dot or other marking) mates with pin 1 of inverter board.
8	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.24. Power Supply Assembly Status Panel Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: 5/16-inch nut driver	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	Tag and remove two wires from OUTPUT POWER switch S1.
3	Using 5/16-inch nut driver, remove two nylon nuts and spaces securing status panel to power supply assembly cover.
4	Remove status panel from power supply assembly cover.
<b>INSTALLATION</b>	
Tools required: 5/16-inch nut driver	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	

§ **Table 2.5.24. Power Supply Assembly Status Panel Removal and Installation - CONT**

Step	Procedure
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Position status panel on mounting screws.
3	Using 5/16-inch nut driver, install two nylon nuts and spacers securing status panel to power supply assembly cover.
4	Using tags as a guide, install two wires to OUTPUT POWER switch S1.
5	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.25. Power Supply Assembly OUTPUT POWER Switch Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.</p>	
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	At rear of OUTPUT POWER switch, tag and remove two wires.
3	Press plastic tabs on both sides of switch while pushing switch out the front of power supply assembly cover.
<b>INSTALLATION</b>	
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.</p>	
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Push switch through the front of power supply assembly cover until plastic tabs lock switch into place.
3	At rear of OUTPUT POWER switch using tags as a guide, install two wires.
4	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.26. Power Supply Assembly Circuit Breaker Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
<p>Tools required: Small flat-tipped screwdriver 9/16-inch nut driver</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.</p>	

**Table 2.5.26. Power Supply Assembly Circuit Breaker Removal and Installation -CONT**

Step	Procedure
1	Remove power supply assembly cover in accordance with table 2.5.6.
2	Using small flat-tipped screwdriver, remove two wires from circuit breaker.
3	Using 9/16-inch nut driver, remove nut and washer securing circuit breaker to power supply assembly chassis.
4	Carefully remove circuit breaker from chassis.
<b>INSTALLATION</b>	
Tools required: Small flat-tipped screwdriver 9/16-inch nut driver	
<b><u>WARNING</u></b>	
Ensure that power is completely removed from UPS by performing the procedure in table 2.5.6. Death or severe injury may result if power is not completely removed from UPS prior to removing the cover in front of UPS components and performing maintenance on UPS subassemblies.	
1	Verify that power supply assembly cover is removed in accordance with table 2.5.6.
2	Install circuit breaker in power supply assembly chassis.
3	Using 9/16-inch nut driver, install nut and washer securing circuit breaker chassis.
4	Using small flat-tipped screwdriver, install two wires on circuit breaker.
5	Install power supply assembly cover in accordance with table 2.5.6.

**Table 2.5.27. DC Power Supply Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: Small flat-tipped screwdriver	
<b>NOTE</b> ACU power need not be turned off for dc power supply interchange. This allows normal operation of ACU during removal and replacement.	
1	Using figure 2.1.6, locate dc power supply to be removed.
<b>NOTE</b> On/off switch has a built-in lock that prevents removing power supply while switch is in 1 (on) position. Switch must be set to 0 (off) before power supply can be removed.	
2	At dc power supply, set front panel on/off switch to 0 (off) position.
<b><u>CAUTION</u></b> Wait 1 minute before removing power supply from chassis to allow internal capacitors to discharge through drain circuits.	
3	Using small flat-tipped screwdriver, remove two panel screws securing dc power supply to Power Supply Enclosure 1A5.
4	Grasp dc power supply handle and slide out of enclosure.

Table 2.5.27. DC Power Supply Removal and Installation -CONT

Step	Procedure
<b>INSTALLATION</b>	
Tools required: Small flat-tipped screwdriver	
<b>NOTE</b> ACU power need not be turned off for dc power supply interchange. This allows normal operation of ACU during removal and replacement.	
1	Set replacement power supply front panel on/off switch to 0 (off) position.
2	Position dc power supply in Power Supply Enclosure 1A5 and slide into enclosure.
3	Using small flat-tipped screwdriver, install two panel screws securing dc power supply to enclosure.
4	Set power supply front panel on/off switch to 1 (on) position.

Table 2.5.28. DC Power Supply Fan Connector Board Removal and Installation

Step	Procedure
<b>REMOVAL</b>	
Tools required: Small flat-tipped screwdriver No. 1 Phillips screwdriver No. 2 Phillips screwdriver 3/8-inch nut driver	
<b>WARNING</b> Death or severe injury may result if power is not removed from ACU prior to maintenance activities. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.	
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
<b>NOTE</b> On/off switch has a built-in lock that prevents removing power supply while switch is in 1 (on) position. Switch must be set to 0 (off) position before power supply can be removed.	
3	Set front panel on/off switch on dc power supplies to 0 (off) position.
<b>CAUTION</b> Wait 1 minute before removing power supplies from chassis to allow internal capacitors to discharge through drain circuits.	
4	Using small flat-tipped screwdriver, remove four panel screws securing dc power supplies to DC Power Supply Enclosure 1A5.
5	Remove dc power supplies from enclosure.
6	Using No. 1 Phillips screwdriver at rear of power supply enclosure, remove four screws securing connectors J2A and J2B to dc power supply fan connector board. Remove connectors J2A and J2B.
7	At dc power supply fan connector board, tag and remove wires from terminal boards TB1A and TB1B.
8	Using No. 2 Phillips screwdriver, remove wires from terminal boards TB2A and TB2B.
9	Using 3/8-inch nut driver, tag and remove wires from output studs A and B.
10	Using No. 1 Phillips screwdriver, remove 12 screws, flat washers, and lockwashers securing fan connector board to dc power supply enclosure.
11	Remove fan connector board from dc power supply enclosure.

**Table 2.5.28. DC Power Supply Fan Connector Board Removal and Installation -CONT**

Step	Procedure
<b>INSTALLATION</b>	
Tools required: Small flat-tipped screwdriver No. 1 Phillips screwdriver No. 2 Phillips screwdriver 3/8-inch nut driver	
<div style="text-align: center;"><b><u>WARNING</u></b></div> <p>Death or severe injury may result if power is not removed from ACU prior to maintenance activities. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.</p>	
1	Verify that UPS POWER switch is set to 0 (off) position.
2	Verify that facility power is removed from ACU cabinet.
3	Position fan connector board on rear of DC Power Supply Enclosure 1A5 with connector J2A in the top right corner.
4	Using No. 1 Phillips screwdriver, install 12 screws, flat washers, and lockwashers securing fan connector board to dc power supply enclosure. Ensure that two green chassis ground wires are connected.
5	Install connectors J2A and J2B on fan connector board.
6	Using No. 1 Phillips screwdriver, install four screws securing connectors J2A and J2B to fan connector board.
7	Using 3/8-inch nut driver and tags as a guide, install wires on output studs A and B.
8	Using No. 2 Phillips screwdriver, install wires on fan connector board terminal boards TB2A and TB2B.
9	Install wires on terminal boards TB1A and TB2A.
10	Set front panel on/off switch on dc power supplies to 0 (off) position.
11	Slide dc power supplies into Power Supply Enclosure 1A5.
12	Using small flat-tipped screwdriver, install four panel screws securing dc power supplies to enclosure.
13	Set dc power supplies front panel on/off switches to 1 (on) position.
14	Apply facility power to ACU cabinet.
15	Set UPS POWER switch to 1 (on) position.

**Table 2.5.29. Blower Removal and Installation**

Step	Procedure
<b>REMOVAL</b>	
Tools required: No. 2 Phillips screwdriver Diagonal cutting pliers Small screwdriver	
<div style="text-align: center;"><b><u>WARNING</u></b></div> <p>Death or severe injury may result if power is not removed from ACU prior to maintenance activities. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.</p>	
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.

Table 2.5.29. Blower Removal and Installation -CONT

Step	Procedure
	<p align="center"><b>NOTE</b></p> <p>Blower may have either long power cord or short power cord. If blower has long power cord, it is connected directly to Power Distribution Assembly 1A7 at rear of ACU. If blower has short power cord, it is butt-spliced into extension that connects to 1A7.</p>
3	If blower has short power cord, at rear of cabinet, tag ac power wires at butt splice connection to blower power cord.
4	If blower has short power cord, using diagonal cutting pliers, cut cabinet harness ac power cord near butt splice connectors.
5	If blower has long power cord, using small screwdriver, disconnect three blower power wires from Power Distribution Assembly 1A7.
	<p align="center"><b>NOTE</b></p> <p>There are two types of cabinets for the ACU. One type has a partial length front door with the blower mounted behind an air intake grill. The other type of cabinet has a full length door with the blower accessible with the door open.</p>
6	If ACU cabinet has a partial length front door, using Phillips screwdriver, remove six Phillips screws and lockwashers securing air intake grill to lower front of cabinet. Remove air intake grill.
7	If ACU cabinet has a full length front door, open front door. Loosen knurled knobs on either side of shield in front of blower B1 and remove shield.
8	Remove air filter from blower.
9	Using Phillips screwdriver, remove four screws, lockwashers, and flat washers securing blower to ACU cabinet.
10	Remove blower from cabinet.
<b>INSTALLATION</b>	
<p>Tools required:</p> <ul style="list-style-type: none"> <li>No. 2 Phillips screwdriver</li> <li>Wire stripper</li> <li>Crimping tool</li> <li>Butt splice connectors M7928/5-3</li> <li>Small screwdriver</li> </ul>	
<p align="center"><b>WARNING</b></p> <p>Death or severe injury may result if power is not removed from ACU prior to maintenance activities. Ensure that UPS POWER switch is set to 0 (off) position and facility power is removed from ACU.</p>	
1	Verify that UPS POWER switch on UPS status panel is set to 0 (off) position.
2	Verify that facility power is removed from ACU cabinet.
	<p align="center"><b>NOTE</b></p> <p>There are two types of cabinets for the ACU. One type has a partial length front door with the blower mounted behind an air intake grill. The other type of cabinet has a full length door with the blower accessible with the door open.</p>
3	Slide blower into ACU cabinet. Using Phillips screwdriver, install four screws, flat washers, and lockwashers securing blower to cabinet.

Table 2.5.29. Blower Removal and Installation -CONT

Step	Procedure
	<p style="text-align: center;"><b>NOTE</b></p> <p>Blower may have either long power cord or short power cord. If blower has long power cord, it is connected directly to Power Distribution Assembly 1A7 at rear of ACU. If blower has short power cord, it is butt-spliced into extension that connects to 1A7.</p>
4	<p>If blower has long power cord, using small screwdriver, connect three blower power wires to Power Distribution Assembly 1A7 as follows:</p> <p style="margin-left: 40px;">BLK 1A7-18D WHT 1A7-19D GRN 1A7-20D</p>
5	If blower has short power cord, using crimping tool and butt splice connectors (with tags as a guide), connect blower ac power wires to cabinet harness ac power extension wires.
6	Install air filter in blower.
7	If ACU cabinet has a partial length front door, position air intake grill in front of blower. Using Phillips screwdriver, install six Phillips screws and lockwashers securing air intake grill to lower front of cabinet.
8	If ACU cabinet has a full length front door, install blower shield in front of blower and hand tighten two knurled knobs on shield.
9	Apply facility power to ACU cabinet.
10	Set UPS POWER switch to 1 (on) position.

Table 2.5.30. Battery Box and Battery Removal and Installation

Step	Procedure
	<b>REMOVAL</b>
	<p>Tools required:</p> <p style="margin-left: 40px;">Two 5/16-inch box wrenches No. 2 Phillips screwdriver Small screwdriver</p>
	<b><u>WARNING</u></b>
	<p>Death or severe injury may result if power is not removed from ACU prior to performing maintenance activities. Ensure that UPS POWER switch is set to 0 (off) and facility power is removed from ACU.</p> <p>Severe injury may result if the negative and positive battery terminals are shorted together. Exercise caution while removing batteries.</p>
1	Set UPS POWER switch to 0 (off) position.
2	Remove facility power from ACU cabinet.
3	<p>Disconnect Battery Box 1A8.</p> <ol style="list-style-type: none"> <li>a. For battery box, part number 62828-40063-10, connector J1, squeeze tabs on side of connector inward while rocking connector free.</li> <li>b. For battery box, 62828-40062-30 or 62828-90360-10, pull battery box connector P1 out of UPS PRA BATTERY BOX connector.</li> </ol>



Table 2.5.30. Battery Box and Battery Removal and Installation -CONT

Step	Procedure
4	Wait at least 30 seconds while UPS capacitors discharge through bleeders and other drains.  <b>NOTE</b> ACU blower 1B1 must be removed to access Battery Box 1A8.
5	Using small screwdriver, tag and remove three blower ac power wires from AC Power Distribution Assembly 1A7 terminals 1A7-18D, -19D, and -20D.  <b>NOTE</b> There are two types of cabinets for the ACU. One type has a partial length front door with the blower mounted behind an air intake grill. The other type of cabinet has a full length door with the blower accessible with the door open.
6	If ACU cabinet has a partial length front door, using Phillips screwdriver, remove six Phillips screws and lockwashers securing air intake grill to lower front of cabinet. Remove air intake grill.
7	If ACU cabinet has a full length front door, open front door. Loosen knurled knobs on either side of shield in front of blower B1 and remove shield.
8	Remove air filter from blower.
9	Using Phillips screwdriver, remove four screws, lockwashers, and flat washers securing blower to ACU cabinet.
10	Remove blower from ACU cabinet.
	<b><u>WARNING</u></b>  Pressure sensors in RF/Pressure Mounting Shelf 1A6 are safety-critical devices. Pressure sensors may output erroneous readings if plastic vent tubing to I/O panel assembly is damaged or crimped. Throughout this procedure, exercise caution to avoid damage to pressure vent tubing.
11	Disconnect retaining strap securing Battery Box 1A8 to inside of ACU cabinet.
	<b><u>WARNING</u></b>  Battery box is heavy equipment (weighs from 60 to 70 pounds) and should be slid, not lifted. If lifted, two-man or mechanical lift is required. Failure to comply may result in injury to personnel or damage to equipment.
12	Slide Battery Box 1A8 from ACU cabinet through blower opening.
	<b><u>CAUTION</u></b>  When lifting top of battery tray, do not pull the attached wires off the connector.
13	Lift top of battery box and position so that battery terminals can be accessed.
	<b><u>WARNING</u></b>  Batteries contain corrosive fluid. Do not tip batteries during removal.  Severe injury may result if the negative and positive battery terminals are shorted together. Exercise caution while removing batteries.
14	Using two 5/16-inch box wrenches, remove bolt, flat washers, lockwasher, and nut from negative terminal of battery BT1 (connected to top of battery box via black wires). Remove black wires from negative terminal.

Table 2.5.30. Battery Box and Battery Removal and Installation -CONT

Step	Procedure
15	Using two 5/16-inch box wrenches, remove bolt, flat washers, lockwasher, and nut from positive terminal of battery BT5 (connected to top of battery box via red wires). Remove red wires from positive terminal.
16	Remove top of battery box.
17	Using two 5/16-inch box wrenches, remove bolt, lockwasher, flat washers, and nut from battery terminals and remove all jumper wires.
18	Using strap tied around battery BT5 or packing material, remove from battery box.
19	Remove and retain strap.
20	Remove additional batteries.
<b>INSTALLATION</b>	
Tools required: Two 5/16-inch box wrenches	
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Death or severe injury may result if power is not removed from ACU prior to performing maintenance activities. Ensure that UPS POWER switch is set to 0 (off) and facility power is removed from ACU.</p>	
1	Verify that UPS POWER switch is set to 0 (off) position.
2	Verify that facility power is removed from ACU.
3	Tie previously removed strap around battery BT5 or packing material to facilitate future removal. Leave approximately 2 inches of slack between top of battery or packing material and strap.
4	Using figure 2.1.8, install batteries in battery box.
<p style="text-align: center;"><b>NOTE</b></p> <p>Refer to figure 2.4.12 or 2.4.13 for wiring diagram of battery box.</p>	
5	Using markers as a guide and two 5/16-inch box wrenches, install jumpers to battery terminals, securing with bolt, flat washer, lockwasher, and nut.
6	Position top of battery box so that red wires can be connected to positive terminal and black wires can be connected to negative terminal.
7	Using two 5/16-inch box wrenches, install bolt, flat washers, lockwasher, and nut securing wires to respective terminals.
8	Position top over battery box and press into place.
<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Battery box is heavy equipment (weighs approximately 75 pounds) and should be slid, not lifted. If lifted, two-man or mechanical lift is required. Failure to comply may result in injury to personnel or damage to equipment.</p> <p>Pressure sensors in RF/Pressure Mounting Shelf 1A6 are safety-critical devices. Pressure sensors may output erroneous readings if plastic vent tubing to I/O panel assembly is damaged or crimped. Throughout this procedure, exercise caution to avoid damage to pressure vent tubing.</p>	
9	Slide battery box into ACU cabinet through blower opening. While taking care not to damage or crimp pressure sensor vent tubing, position box with connector J1 to right and two rear corners in contact with vertical plates.
10	Secure battery box in position by installing retaining strap to left and right vertical plates.

Table 2.5.30. Battery Box and Battery Removal and Installation -CONT

Step	Procedure
	<p style="text-align: center;"><b>NOTE</b></p> <p>There are two types of cabinets for the ACU. One type has a partial length front door with the blower mounted behind an air intake grill. The other type of cabinet has a full length door with the blower accessible with the door open.</p>
11	Slide blower into ACU cabinet. Using Phillips screwdriver, install four screws, flat washers, and lockwashers securing blower to cabinet.
12	Install air filter in blower.
13	If ACU cabinet has a partial length front door, position air intake grill in front of blower. Using Phillips screwdriver, install six Phillips screws and lockwashers securing air intake grill to lower front of cabinet.
14	If ACU cabinet has a full length front door, install blower shield in front of blower and hand tighten two knurled knobs on shield.
15	Using small screwdriver and tags as a guide, install three blower ac power wires to AC Power Distribution Assembly 1A7 terminals 1A7-18D, -19D, and -20D.
16	Ensure that pressure sensor vent tubing is properly connected to pressure sensors and PRESSURE VENT on I/O Panel Assembly 1A9 and is not damaged or crimped.
	<p style="text-align: center;"><b>NOTE</b></p> <p>Ensure that battery plug is fully seated and locked into place.</p>
17	<p>Connect Battery Box 1A8.</p> <p>a. For battery box, part number 62828-40063-10, position W030 cable connector P1 on top of battery box connector J1 and press connector into place.</p> <p>b. For battery box, part number 62828-40062-30 or 62828-90360-10, insert battery box connector into UPS PRA BATTERY BOX connector.</p>
18	Apply facility power to ACU cabinet.
19	Set UPS POWER switch to 1 (on) position.

Table 2.5.31. Uninterruptible Power Supply Removal and Installation

Step	Procedure
	<b>REMOVAL</b>
	<p>Tools required: Phillips screwdriver</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Death or severe injury may result if power is not removed from the ACU prior to performing maintenance activities. Ensure that UPS POWER switch is set to 0 (off) and that facility power is removed from the ACU.</p> <p>Severe injury may result if the negative and positive battery terminals are shorted together. Exercise caution while removing batteries.</p>
1	Set UPS power switch to off position.
2	Remove facility power from ACU cabinet.
3	Disconnect UPS from wiring harness by removing connectors P97, P1, and P13.
4	Using screwdriver, disconnect cable W78 connector P2 from COMM PORT by removing two screws.

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Table 2.5.31. Uninterruptible Power Supply Removal and Installation -CONT

Step	Procedure
5	Using screwdriver, remove four screws securing shelf, then slide UPS shelf out of ACU.
6	Unstrap UPS from shelf.
7	Lift and pull UPS off shelf.
<b>INSTALLATION</b>	
Tools required: Phillips screwdriver	
<b><u>WARNING</u></b>	
Death or severe injury may result if power is not removed from the ACU prior to performing maintenance activities. Ensure that UPS power switch is set to off and that facility power is removed from the ACU.	
Severe injury may result if the negative and positive battery terminals are shorted together. Exercise caution while removing batteries.	
1	Verify that UPS power switch is set to off position.
2	Verify that facility power is removed from ACU.
3	Slide UPS shelf out of ACU.
4	Place UPS on shelf.
5	Secure UPS onto shelf with strap.
6	Slide shelf into ACU cabinet; using Phillips screwdriver, install four screws securing shelf in place.
7	Using Phillips screwdriver, connect cable W78 connector P2 to COMM PORT by securing two screws.
8	Connect UPS to wiring harness by connecting connectors P97, P1, and P13.
9	Apply facility power to ACU.
10	Set UPS power switch to on position.

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Table 2.5.32. ACU Tie-Down Removal and Installation

Step	Procedure
<b>INSTALLATION</b>	
Tools and materials required: Small Flat-blade screwdriver 3/4-inch open end wrench No. 2 Phillips screwdriver 3/8 inch power drill (wood installation) 1/2-inch power (hammer type preferred) drill (concrete installation) Various wood, metal, and masonry bits Scotchbrite (or equivalent) pad Denatured alcohol Earthquake mounting kit (part number 62828-40306-100)	
<b><u>WARNING</u></b>	
Death or severe injury may result if power is not removed from ACU prior to performing FMK instructions. Ensure that OUTPUT POWER switch is set to 0 (off) and facility power is removed from ACU.	

Table 2.5.32. ACU Tie-Down Removal and Installation -CONT

Step	Procedure																														
<div>NOTE</div> <p>If this installation is being performed for the first time it is necessary to use the materials and instructions found in FMK #078. If this installation is being performed to reinstall an ACU that already has earthquake mounts, it will be necessary to replace the lag bolts, washers, lag shields (used for concrete installation only), and conductive adhesive (see the following chart for information):</p> <table><tr><th>ITEM</th><th>QTY</th><th>CAGE CODE</th><th>PART NUMBER</th><th>NOMENCLATURE</th></tr><tr><td>1</td><td>2</td><td>0J8A4</td><td>62828-40270-1</td><td>Channel, Mounting</td></tr><tr><td>2</td><td>4</td><td>0J8A4</td><td>62828-90410-1</td><td>Screw, Lag Bolt Hx-Hd</td></tr><tr><td>3</td><td>4</td><td>0J8A4</td><td>62828-90329-2</td><td>Washer, Flat-metal, Rd</td></tr><tr><td>4</td><td>1</td><td>3796X</td><td>72-00192</td><td>Adhesive, Conductive, w/primer</td></tr><tr><td>5</td><td>4</td><td>88367</td><td>1155</td><td>Lag Shield</td></tr></table> <p>This procedure is based upon a UPS installation: where no UPS is installed, skip all steps which refer to the UPS or to the battery box.</p>		ITEM	QTY	CAGE CODE	PART NUMBER	NOMENCLATURE	1	2	0J8A4	62828-40270-1	Channel, Mounting	2	4	0J8A4	62828-90410-1	Screw, Lag Bolt Hx-Hd	3	4	0J8A4	62828-90329-2	Washer, Flat-metal, Rd	4	1	3796X	72-00192	Adhesive, Conductive, w/primer	5	4	88367	1155	Lag Shield
ITEM	QTY	CAGE CODE	PART NUMBER	NOMENCLATURE																											
1	2	0J8A4	62828-40270-1	Channel, Mounting																											
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3	4	0J8A4	62828-90329-2	Washer, Flat-metal, Rd																											
4	1	3796X	72-00192	Adhesive, Conductive, w/primer																											
5	4	88367	1155	Lag Shield																											
1	Set OUTPUT POWER switch on UPS status panel to 0 (off) position. OUTPUT indicator on status panel extinguishes.																														
2	Remove facility power from ACU cabinet.																														
3	Disconnect Battery Box 1A8.  a. For battery box, part number 62828-40063-10, connector J1, squeeze tabs on side of connector inward while rocking connector free.  b. For battery box, part number 62828-40062-30, pull battery box connector P1 out of UPS PRA BATTERY BOX connector.																														
4	Wait at least 30 seconds while UPS capacitors discharge through bleeders and other drains.																														
<div>NOTE</div> <p>ACU blower 1B1 must be removed to access Battery Box 1A8.</p>																															
5	Using small screwdriver, tag and remove three blower ac power wires from AC Power Distribution Assembly 1A7 terminals 1A7-18D, -19D, and -20D.																														
<div>NOTE</div> <p>There are two types of cabinets for the ACU. One type has a partial length front door with the blower mounted behind an air intake grill. The other type of cabinet has a full length door with the blower accessible with the door open.</p>																															
6	If ACU cabinet has a partial length front door, using Phillips screwdriver, remove six Phillips screws and lockwashers securing air intake grill to lower front of cabinet. Remove air intake grill.																														
7	If ACU cabinet has a full length front door, open front door. Loosen knurled knobs on either side of shield in front of blower B1 and remove shield.																														
8	Remove air filter from blower.																														
9	Using Phillips screwdriver, remove four screws, lockwashers, and flat washers securing blower to ACU cabinet.																														
10	Remove blower from ACU cabinet.																														
11	Disconnect strap securing Battery Box 1A8 to inside of ACU cabinet.																														

Table 2.5.32. ACU Tie-Down Removal and Installation -CONT

Step	Procedure
	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Battery box is heavy equipment (weighs from 60 to 70 pounds) and should be slid, not lifted. If lifted, two-man or mechanical lift is required. Failure to comply may result in injury to personnel or damage to equipment.</p>
12	Slide Battery Box 1A8 from ACU cabinet through blower opening.
13	Verify all cables connected to the I/O panel assembly are properly marked. Disconnect all cables from the I/O panel assembly.
14	If 1A9 is ported through tubing, disconnect pressure tubing from 1A9.
15	<p>Secure ACU to floor. Determine the type of material that the ACU is to be mounted to (concrete or wood). Follow the instructions for that material type.</p> <p style="text-align: center;"><b>CONCRETE</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Perform the following steps if the material that the ACU is to be mounted is composed of concrete.</p> <ol style="list-style-type: none"> <li>a. Place "U" channel pieces in ACU as shown in figure 2.5.1, Section A-A and mark bottom of ACU (in four places, as shown) in preparation for drilling mounting holes.</li> <li>b. Use a center punch to define hole centers to be drilled.</li> <li>c. Using 2X4 boards as supports, lift the ACU above the floor. Drill four holes, 0.397 inch in diameter, through bottom of cabinet.</li> <li>d. Place ACU in its exact position. Using the four holes drilled through the bottom of the ACU as a guide, mark the floor in preparation for drilling.</li> <li>e. Move ACU out of position and drill four holes 0.625 inch in diameter into the concrete to a depth of 2.88 inches each.</li> <li>f. Blow each hole clean of dust and insert an anchor (lag shield) into each hole until it is flush with the surface.</li> <li>h. Using sandpaper, remove paint and primer from around holes drilled in the ACU; clear a 0.75-inch diameter circle surrounding each hole diameter on the interior and exterior surfaces of the cabinet.</li> <li>i. Move ACU back into position and prepare all surfaces to be bonded. These surfaces include the bottom edge of each lag bolt, both sides of each washer, the area around each "U" channel hole, and the paint-free areas around the holes drilled in the ACU cabinet. Prepare all surfaces to be bonded using the following instructions: <ol style="list-style-type: none"> <li>(1) Scour all surfaces to be bonded with a Scotchbrite (or equivalent) pad.</li> <li>(2) Clean all surfaces to be bonded with denatured alcohol.</li> <li>(3) Apply primer to all surfaces to be bonded; allow to air dry for 2 hours.</li> </ol> </li> <li>j. Place the two "U" channel pieces into position and secure the ACU to the floor with the lag bolts and flat washers. The bottom edge of each lag bolt, each washer, and the paint-free areas around the holes drilled in the ACU cabinet should be coated with conductive adhesive immediately prior to use.</li> </ol>

Table 2.5.32. ACU Tie-Down Removal and Installation -CONT

Step	Procedure
	<p><b>WOOD</b></p> <p><b>NOTE</b></p> <p>If the material that the ACU is to be mounted to is composed of wood, perform the following steps.</p> <ol style="list-style-type: none"> <li>Place "U" channel pieces in ACU as shown in figure 2.5.1, Section A-A and mark bottom of ACU (in four places, as shown) in preparation for drilling mounting holes.</li> <li>Use a center punch to define hole centers to be drilled.</li> <li>Using 2X4 boards as supports, lift the ACU above the floor. Drill four holes, 0.397 inch in diameter through bottom of cabinet.</li> <li>Determine the position of the ACU. The chosen position must allow the lag bolts to be screwed into the floor joists when the lag bolts are installed.</li> <li>Place ACU in its exact position. Using the four holes drilled through the bottom of the ACU as a guide, mark the floor in preparation for drilling.</li> <li>Move ACU out of position and drill four holes 0.312 inch in diameter through the wood floor and into the joists to a depth of 2.88 inches each.</li> <li>Blow each hole clean of sawdust.</li> <li>Using sandpaper, remove paint and primer from around holes drilled in the ACU; clear a 0.75-inch diameter circle surrounding each hole diameter, on the interior and exterior surfaces of the cabinet.</li> <li>Move ACU back into position and prepare all surfaces to be bonded. These surfaces include the bottom edge of each lag bolt, both sides of each washer, the area around each "U" channel hole, and the paint-free areas around the holes drilled in the ACU cabinet. Prepare all surfaces to be bonded using the following instructions: <ol style="list-style-type: none"> <li>Scour all surfaces to be bonded with a Scotchbrite (or equivalent) pad.</li> <li>Clean all surfaces to be bonded with denatured alcohol.</li> <li>Apply primer to all surfaces to be bonded and allow to air dry for 2 hours.</li> </ol> </li> <li>Place the two "U" channel pieces into position and secure the ACU to the floor with the lag bolts and flat washers. The bottom edge of each lag bolt, each washer, and the paint free areas around the holes drilled in the ACU cabinet should be coated with conductive adhesive immediately prior to use.</li> </ol>
16	Vacuum inside of ACU cabinet and remove all foreign matter.
17	Slide battery box into ACU cabinet through blower opening. While taking care not to damage or crimp pressure sensor vent tubing, position box with connector J1 to right and two rear corners in contact with restraining angles.
18	Secure battery box in position by hooking restraining strap to left and right angles.
19	Slide blower into ACU cabinet. Using Phillips screwdriver, install four screws, flat washers, and lockwashers securing blower to cabinet.
20	Install air filter in blower.

**Table 2.5.32. ACU Tie-Down Removal and Installation -CONT**

Step	Procedure
21	If ACU cabinet has a partial length front door, position air intake grill in front of blower. Using Phillips screwdriver, install six Phillips screws and lockwashers securing air intake grill to lower front of cabinet.
22	If ACU cabinet has a full length front door, install blower shield in front of blower and hand tighten two knurled knobs on shield.
23	Using small screwdriver and tags as a guide, install three blower ac power wires to AC Power Distribution Assembly 1A7 terminals 1A7-18D, -19D, and -20D.
24	If pressure tubing was disconnected from 1A9 (in step 14), reconnect it and ensure that it is not damaged or crimped.
25	<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Ensure that battery plug is fully seated and locked into place.</p> <p>Connect Battery Box 1A8.</p> <p style="margin-left: 40px;">a. For battery box, part number 62828-40063-10, position W030 cable connector P1 on top of battery box connector J1 and press connector into place.</p> <p style="margin-left: 40px;">b. For battery box, part number 62828-40062-30, insert battery box connector into UPS PRA BATTERY BOX connector.</p>
26	Reconnect all cables to the I/O Panel Assembly.
27	Apply facility power to ACU cabinet.
28	(Class II Systems Only) Set UPS POWER switch to 1 (on) position.
<b>CHECK OUT SYSTEM</b>	
1	Sign on at OID as a technician.
2	Check 12 HR pages to ensure that data is being collected from sensors.
3	Ensure that all peripherals connected to the system are operational.
4	Clear all failures on MAINT pages for the ACU and DCP that were caused by powering system down.
5	Update maintenance log to reflect addition of ACU tie-downs.



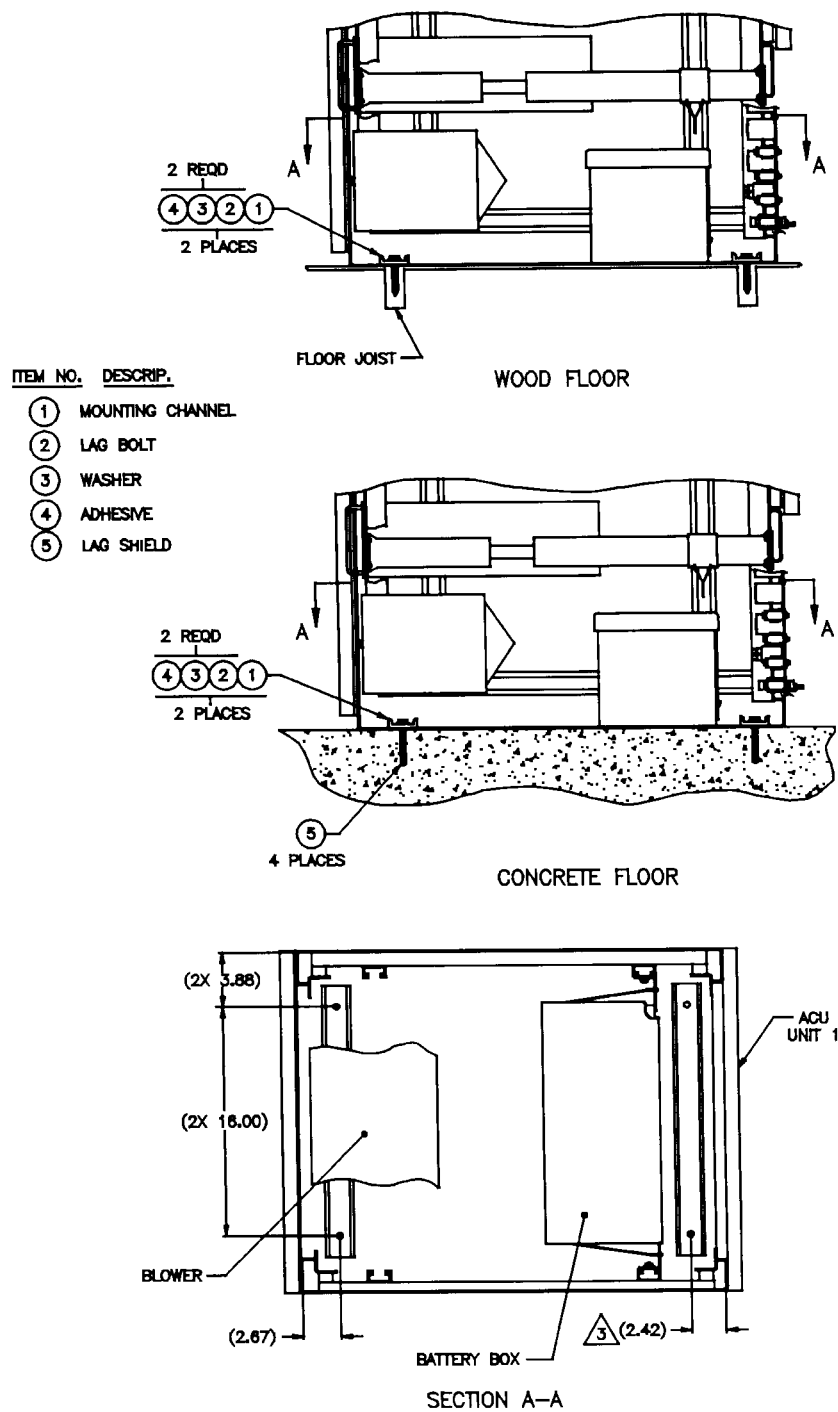


Figure 2.5.1 Earthquake Mounting Installation

### 2.5.5 SETTING UP LEASED LINE MODEMS

Leased lines are used to allow the ACU to communicate with peripherals (OID's, VDU's, CVD's, and printers) located at various positions throughout the ASOS site. For each leased line peripheral, two telephone modems are used: one at the ACU and one at the peripheral. At the ACU, a rack-mounted modem is installed in Modem AC Power Rack 1A3. At the peripheral, a stand-alone (S/A) modem is used.

**2.5.5.1 Setting Up ACU Rack-Mounted Modems.** After a rack-mounted modem is installed in the ACU, it is configured via the ACU serial communications page. From this page, the modem is assigned a function, assigned to an SIO port, assigned a baud rate, and specified for leased line operation. Baud rates for the model 2440 modem are 2400 for OID's, VDU's, and printers and 1200 for CVD's. The baud rate is 9600 for the model V.3225 modem and 28800 for the model V.3400 modem. After a rack-mounted modem is installed and configured on the ACU serial communications page, the ACU program automatically programs the modem for operation. No other action is required on the part of the technician.

**2.5.5.2 Setting Up Stand Alone Modems.** After a stand alone modem is installed at the peripheral end, it must be manually programmed to operate in leased line mode with the proper parameters. This is accomplished using the LCD display and the YES and NO pushbutton switches on the front panel of the modem (same as rack-mounted modems shown on figure 2.3.4). The LCD display presents main menus, submenus, and configuration options to the technician. The NO pushbutton is used to sequence through the main menus and the YES pushbutton is used to branch to submenus and to select appropriate options. The Installation and Operation Manual for the stand-alone modem provides detailed information on all menus, submenus, and options available with the modem and provides instructions on their use. Table 2.5.33 identifies the settings that must be manually made for models 2440 and V.3225 stand-alone modems. The model V.3400 does not require manual setup. This table addresses only the settings that must be checked or changed by the technician. They do not address options that are automatically set by the factory or are not required for ASOS operation. The actual menu and option titles that appear on the modem LCD display may vary, depending on the modem's internal firmware.

### 2.5.6 SETTING UP LINE DRIVER MODEMS

The model D19.2 line drivers are obsolete and are replaced by the model DDS/MR64. If a D19.2 line driver fails at a site and spare D19.2 line drivers are not available, then all the D19.2 line drivers must be replaced with the DDS/MR64 line drivers. After installation, the ACU and DCP DDS/MR64 line drivers must be manually programmed to operate with the ASOS parameters by using the LCD display and the YES and NO pushbutton switches on the front panel of the modem (same as rack-mounted modems shown on figure 2.3.4). The LCD display presents main menus, submenus, and configuration options to the technician. The YES/NO pushbuttons are used to sequence through the main menus and submenus and to select appropriate options. The Installation and Operation Manual for the stand-alone line driver provides detailed information on all menus, submenus, and options available with the modem and provides instructions on their use. Table 2.5.34 identifies the options and switch settings that must be manually made for the model DDS/MR64 line driver in the ACU (refer to paragraph 3.5.6 for the model DDS/MR64 line driver in the DCP). This table addresses only the settings that must be checked or changed by the technician. The table does not address options that are automatically set by the factory or are not required for ASOS operation. The actual menu and option titles that appear on the modem LCD display may vary, depending on the modem's internal firmware.

Table 2.5.33. Stand-Alone Modem Setup Parameters

Step	Procedure
<b>MODEL 2440 SETUP PARAMETERS</b>	
<p align="center"><b>NOTE</b></p> <p>The factory settings (step 1) should be performed first and the SAVE operation (step 6) performed last. The order in which other settings are made may vary.</p> <p>Actual menu, submenu, and option names appearing on LCD display may vary due to version of modem firmware. Titles shown in parentheses indicate possible alternates.</p>	
1	Using OPTIONS? main menu and FACTORY? submenu, select FACTORY 1 settings.
2	Using OPTIONS? main menu and SPKR OPTS? submenu, set speaker control always to OFF.
3	Using OPTIONS? main menu and TELE OPTS? submenu, set the following: <ul style="list-style-type: none"> <li>a. LINE TYPE? (or PRIV/PSTN?) to LEASED (or PRIVATE) for OID or VDU to Dial (for AFOS Dial Line)</li> <li>b. ANS/ORIG? to ANSWER mode</li> </ul>
4	Using DATA OPTS? main menu and DTE OPTS? submenu, set DTE RATE? to one of the following baud rates: <ul style="list-style-type: none"> <li>a. 2400 for OID, VDU, or printer</li> <li>b. 1200 for CVD</li> <li>c. 300 for AFOS Dial Line</li> </ul>
5	Using DATA OPTS? main menu and AT CMDS? submenu (or STAT OPTS? main menu and ACU OPTS? submenu), set AT CMDS (or ACU) to D (i.e., disabled).
6	Using SAVE? main menu, save above settings in modem for permanent use after power up.
<b>MODEL V.3225 DIAL UP SETUP PARAMETERS</b>	
<p align="center"><b>NOTE</b></p> <p>The MODEM is configured by using the front panel push buttons. Use the NO push button to cycle through the menu options and the YES push button to select the submenus. Configuration options are selected by pressing YES or NO push buttons when prompted by LCD display with "CHANGE?". Pressing YES activates the configuration option.</p> <p>Factory option set #1 configures the modem for dial up.</p> <p>Actual menu, submenu, and option names appearing on LCD display may vary due to version of modem firmware.</p>	
1	Using MODIFY CONFIGURATION? menu and LOAD/STORE OPTION SET? submenu, load factory option set #1 and answer YES to the ARE YOU SURE? prompt. Modem then prompts to STORE PRESENT OPTIONS? Answer YES.
<b>MODEL V.3225 LEASE LINE SETUP PARAMETERS</b>	
<p align="center"><b>NOTE</b></p> <p>This setup procedure is typical. Modem firmware versions may differ which may cause additional LCD messages to be displayed between steps within this table.</p> <p>The factory settings (step 1) should be performed first and the STORE PRESENT OPTIONS (step 4) performed last. The order in which other settings are made may vary.</p>	
1	Using MODIFY CONFIGURATION? menu and LOAD/STORE OPTION SET? submenu, load factory option set #1 and answer YES to the ARE YOU SURE? prompt. Modem then prompts to STORE PRESENT OPTIONS? Answer NO at this time (this is performed as last step).

Table 2.5.33. Stand-Alone Modem Setup Parameters -CONT

Step	Procedure
2	<p>Using MODIFY CONFIGURATION? menu and CHANGE MODEM PARAMETERS? submenu, perform the following:</p> <ul style="list-style-type: none"> <li>a. Ensure that DCE RATE is set for 9600 TRELLIS.</li> <li>b. Set NORMAL ORIGINATE? FORCED ANSWER mode to FORCED ANSWER.</li> <li>c. Ensure that V.32 FAST TRAIN option is set to DISABLED.</li> <li>d. Ensure that AUTO RETRAIN option is set to ENABLED.</li> <li>e. Change LINE TYPE from DIAL to LEASE.</li> </ul>
3	<p>Using MODIFY CONFIGURATION? menu and CHANGE DTE PARAMETERS? submenu, perform the following:</p> <ul style="list-style-type: none"> <li>a. Ensure that DTE RATE is 9600.</li> <li>b. Set AT COMMAND SET to DISABLED (D).</li> <li>c. Set CTS STATE to CTS FOLLOWS DCD.</li> </ul>
4	<p>Using MODIFY CONFIGURATION? menu and LOAD/STORE OPTION SET?, perform STORE PRESENT OPTIONS and answer YES to the ARE YOU SURE? prompt. LCD temporarily displays OPTIONS PERMANENT prompt. Programming is then complete. LCD displays V.32 9600 IDLE or TRAINING until leased line connection is established, then changes to V.32 9600 ON LINE.</p>

Table 2.5.34. Model DDS/MR64 ACU Rack Mount Line Driver Setup

Step	Procedure		
<div>NOTE</div> <p>D19.2 line drivers and DDS/MR64 line drivers are not compatible. If a D19.2 line driver fails and the failed line driver must be replaced with a DDS/MR64 line driver, all D19.2 installed in the system must be replaced with DDS/MR64 line drivers.</p> <p>Ensure that the line driver LCD does not display “ERROR”, if “ERROR” cannot be cleared the line driver may be defective.</p> <p>The line driver is configured by using the front panel push buttons. Use the NO push button to cycle through the menu options and the YES push button to select the submenu. Configuration options are selected by pressing YES or NO push buttons when prompted by LCD display with “CHANGE?”. Pressing YES activates the configuration option.</p>			
1	Use front panel push buttons to conFigure the DDS/MR64 line driver as follows:		
	Display	Press	Configures Option
	“NO SIGNAL ASYNC DTE RATE” or “ASYNC RA 1200 2.4K BPS LINE”	HOME	(start configuration process)
	TEST	NO	N/A
	“SYNC DTE CHANGE?”	YES	ASYNC DTE
	“RATE ADAPTER DISABLED - CHANGE?”	NO	DISABLE
	“CHANGE TIMING ?”	YES	INT
	“CHG LINE RATE?”	YES	2400 BPS
	“BITS PER WORD=09 CHANGE?”	YES	10

Table 2.5.34. Model DDS/MR64 ACU Rack Mount Line Driver Setup -CONT

Step	Procedure		
1 (cont)	Display	Press	Configures Option
	“CHANGE CONTROL OPTIONS?”	YES	N/A
	“CHANGE RTS CONTROL?”	YES	NORMAL RTS
	“CHANGE SYNC BUFFER OPT?:”	YES	SYNC BUFFER DIS
	“CHANGE REMOTE LB OPT?”	YES	RMT LB ENABLED
	“CHANGE DSR OPTION?”	YES	DSR OPT ENABLED
	“CHANGE SYS STATUS OPT?”	YES	SS OPT DISABLED
	“CHANGE CA OPT?”	YES	CA OPT DISABLED
	“CHANGE RTS-CTS DELAY?”	YES	RTS-CTS NORMAL
	“CHANGE DTE RL OPT?”	YES	DTE RL DISABLED
	“CHANGE DTE LL OPT?”	YES	DTE LL DISABLED
	“CHANGE DTE TP OPT?”	YES	DTE TP DISABLED
	“CHANGE DTE RT OPT?”	YES	DTE RT DISABLED
	“CHANGE 64K SCRAM OPT?”	YES	SCRAMBLER DIS
	“LOAD FACTORY OPTION SET?”	NO	N/A
	“SAVE NEW CONFIGURATION?”	YES	N/A
2	Remove power from ACU.		
3	Remove line driver from modem rack and set jumpers (Figure 2.5.1A) as follows:		
	SW1- RS232 Enable	JP1 EN	JP2 CH GND
	SW2- V.35 Enable		
	SW3-1 OFF	SW3-2 ON	SW3-3 OFF
	SW3-5 OFF	SW3-6 OFF	SW3-7 OFF
	SW4-1 OFF	SW4-2 OFF	SW4-3 ON
			SW4-4 ON
4	Reinsert line driver into modem rack and restore power to ACU.		

## 2.5.7 SETTING UP A DOT MATRIX PRINTER

**2.5.7.1 ACU Serial Communications.** The dot matrix printer used with ASOS can be a Panasonic model KX-P1180, KX-P2180, or KX-P3123. For any of these printers, the technician must ensure that it is properly configured on the ACU serial communications page (Figure 1.3.44). As a minimum, the printer parameters on this page should be set as follows:

BAUD RATE: 2400 for remote printer (9600 for local printer)  
 PARITY SELECT: NONE  
 BITS/CHAR: 8  
 STOP BITS: 1  
 HANDSHAKE: XON/XOFF

After specifying the ACU serial communications parameters, the printer must be manually set up using its front panel controls and indicators. Table 2.5.35 provides the procedure to perform this setup for the KX-P2180. Table 2.5.36 provides the KX-P1180 setup procedure. Table 2.5.37 provides the KX-P3123 setup procedure.

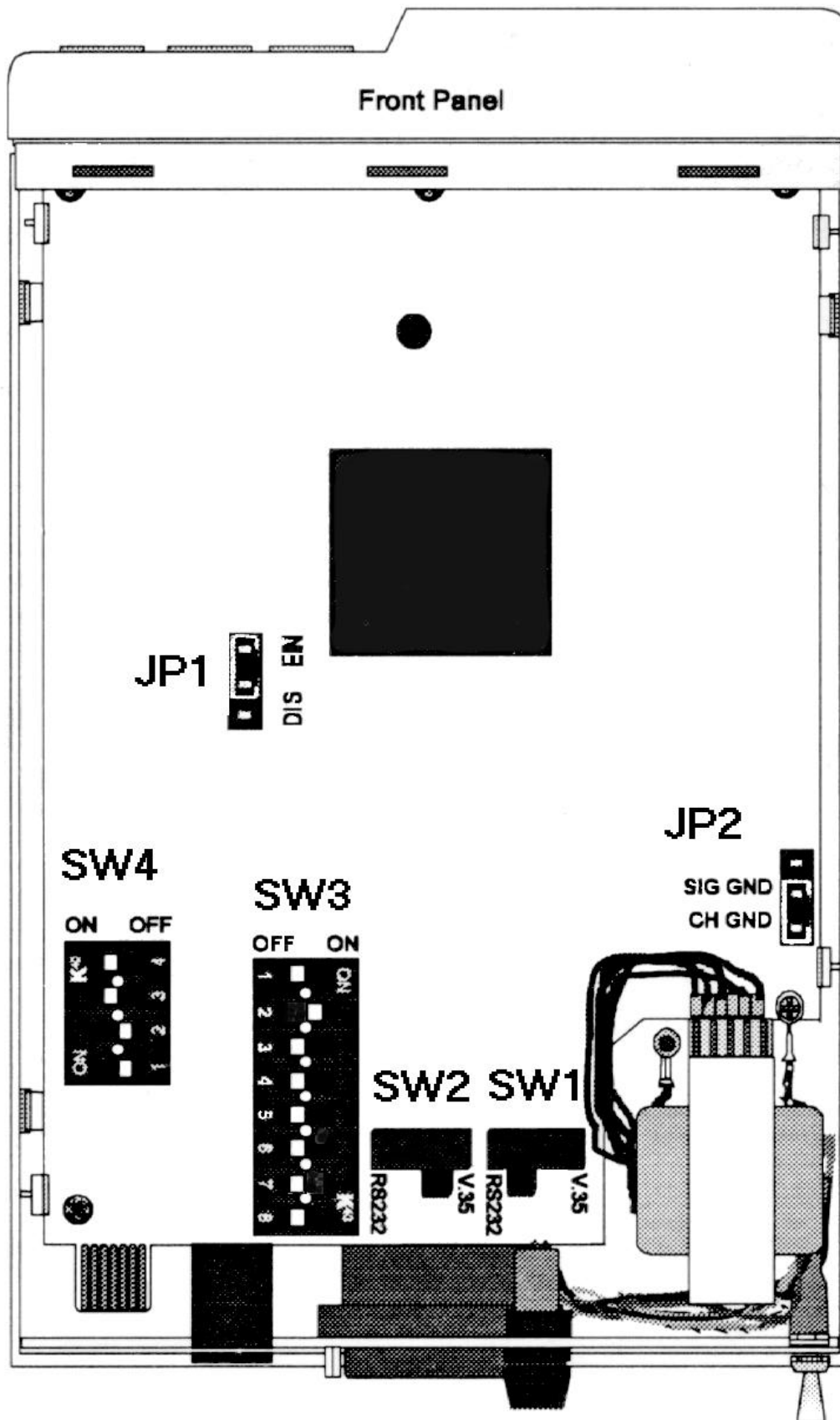


Figure 2.5.1A. DDS/MR64 Line Driver Switch and Jumper Location

**Table 2.5.35. Model KX-P2180 Printer Setup**

Step	Procedure
1	Turn POWER switch OFF.
2	While pressing and holding FUNCTION switch, turn POWER switch ON. The ON LINE/FUNCTION indicator blinks. Initial setup mode is active.
3	Press and release SUPER QUIET switch until ROW indicators are as follows: <div style="text-align: center;"> <div>FONT</div> <div>OFF</div> <div>PITCH</div> <div>ON</div> <div>FORM LENGTH</div> <div>OFF</div> <div>FONT</div> <div>ON</div> </div>
4	Press TEAR OFF key to toggle interface from parallel to serial. The indicator over the first column illuminates.
5	Press and release SUPER QUIET switch until ROW indicators are as follows: <div style="text-align: center;"> <div>FONT</div> <div>OFF</div> <div>PITCH</div> <div>ON</div> <div>FORM LENGTH</div> <div>ON</div> <div>FONT</div> <div>ON</div> </div>
6	Press TEAR OFF key to toggle protocol from DTR to XON/XOFF. The indicator over the first column illuminates.
7	Press FUNCTION switch to exit initial setup mode. The ON LINE/FUNCTION indicator stops blinking.
8	Press SUPER QUIET switch to enter quiet mode.
9	Press FUNCTION switch to enter function mode. The ON LINE/FUNCTION indicator blinks.
10	Press and release TEAR OFF key until column indicator is blinking over MACRO.
11	Press LOAD PARK switch to save the macro. A beep is heard and the column indicator stops blinking.
12	Press FUNCTION switch to exit function mode. The ON LINE/FUNCTION indicator stops blinking.

**Table 2.5.36. Model KX-P1180 Printer Setup**

Step	Procedure
Tools Required: No. 2 Phillips screwdriver	
1	Turn POWER switch OFF.
2	While pressing and holding FUNCTION switch, turn POWER switch ON. The ON LINE/FUNCTION indicator blinks. Initial setup mode is active.
3	Press and release SUPER QUIET switch until ROW indicators are as follows: <div style="text-align: center;"> <div>FONT</div> <div>OFF</div> <div>PITCH</div> <div>ON</div> <div>FORM LENGTH</div> <div>OFF</div> <div>FONT</div> <div>ON</div> </div>
4	Press TEAR OFF key to toggle interface from parallel to serial. The indicator over the first column illuminates.
5	Ensure that printer POWER switch is set to OFF.
6	Ensure that RS-232 serial data cable is disconnected from back of printer and that printer power cable is disconnected from facility output.
7	Remove smoked plastic cover, top cover (with paper guide), and platen knob from printer.

Table 2.5.36. Model KX-P1180 Printer Setup -CONT

Step	Procedure
8	Remove upper cabinet from printer by performing the following steps (Figure 2.5.2): <ol style="list-style-type: none"> <li>Raise rear of printer to gain access to underside.</li> <li>Insert No. 2 Phillips screwdriver into center of release openings. Push screwdriver in to release hooks.</li> <li>While hooks are released, separate upper cabinet from lower cabinet.</li> </ol>
9	On serial interface board at rear of printer, set DIP switch SW1-8 to ON position. This selects XON/XOFF protocol.
10	Install upper cabinet, platen knob, smoked plastic cover, and top cover onto printer.
11	Connect RS-232 serial data cable to rear of printer.
12	Connect printer power cable to facility outlet.
13	Turn printer POWER switch to ON.

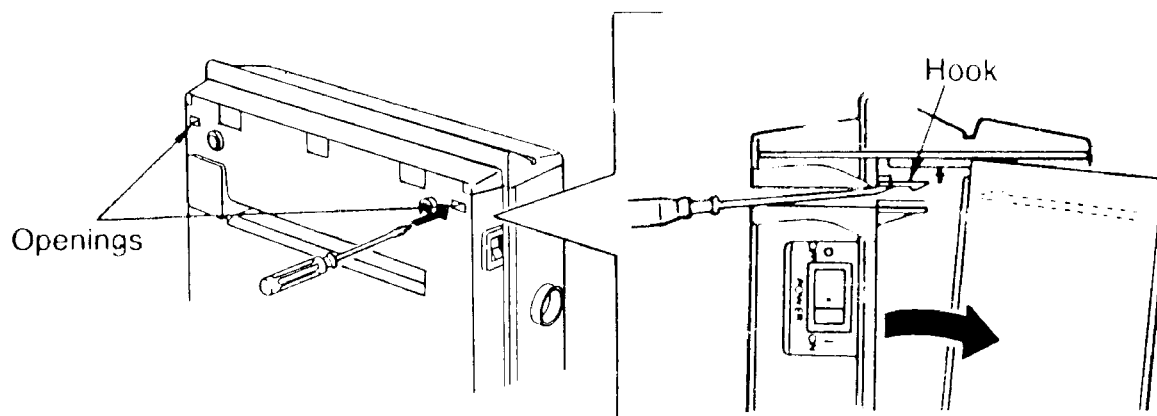


Figure 2.5.2 Upper Cabinet Removal

Table 2.5.37. Model KX-P3123 Printer Setup

Step	Procedure
<b>DEFAULT CONFIGURATION</b>	
<b>NOTE</b>	
It is not necessary to set up a NEW printer that you have just removed from the box if you intend to use it in the local mode (connected directly to the printer port, J25); the configuration for this mode should have been setup at the factory. The "local" mode is not the same as the factory settings mode mentioned below.	
<b>FACTORY SETTINGS</b>	
<b>NOTE</b>	
If you suspect that the printer settings have been accidentally changed, you should reset the printer to the "factory settings" mode using the following procedure, prior to performing the printer setup procedure (otherwise continue to step 1 under printer setup procedure):	



Table 2.5.37. Model KX-P3123 Printer Setup -CONT

Step	Procedure								
1	Turn power switch OFF.								
2	While pressing the FUNCTION key on the printer, turn the power switch on to enter the setup mode. The ON LINE/FUNCTION will start blinking. Row indicators R1 (FONT), R2 (PITCH), R3 (FORM LENGTH), & R4 (OTHERS) will be blinking.								
3	Press LF. You will hear a beep.								
4	Press FUNCTION to exit the function mode.								
<b>PRINTER SETUP</b>									
1	Turn power switch off.								
2	While pressing the FUNCTION key on the printer, turn the power switch on to enter the setup mode. The ON LINE/FUNCTION will start blinking. Row indicators R1 (FONT), R2 (PITCH), R3 (FORM LENGTH), & R4 (OTHERS) will be blinking.								
3	<p><b>PRINTER (INTERFACE) SETUP</b></p> <p>Press and release SUPER QUIET until row indicators are as follows:</p> <table> <tr> <td>R1 FONT</td><td>ON</td></tr> <tr> <td>R2 PITCH</td><td>ON</td></tr> <tr> <td>R3 FORM LENGTH</td><td>OFF</td></tr> <tr> <td>R4 OTHERS</td><td>ON</td></tr> </table>	R1 FONT	ON	R2 PITCH	ON	R3 FORM LENGTH	OFF	R4 OTHERS	ON
R1 FONT	ON								
R2 PITCH	ON								
R3 FORM LENGTH	OFF								
R4 OTHERS	ON								
4	Press TEAR OFF to toggle interface from PARALLEL to SERIAL. The indicator over C1 will light (column indicator C3 is already lit).								
<b>REMOTE PRINTER (ONLY) BAUD RATE SETUP</b>									
<p><b>NOTE</b></p> <p>If the printer you are setting up is a remote printer (a printer using a modem), you must perform the following steps (otherwise, go to step 5):</p> <p>a. Press and release SUPER QUIET until row indicators are as follows:</p> <table> <tr> <td>R1 FONT</td><td>OFF</td></tr> <tr> <td>R2 PITCH</td><td>OFF</td></tr> <tr> <td>R3 FORM LENGTH</td><td>ON</td></tr> <tr> <td>R4 OTHERS</td><td>ON</td></tr> </table> <p>b. Press LF to select 2400 baud. Column indicator C4 will be illuminated.</p>		R1 FONT	OFF	R2 PITCH	OFF	R3 FORM LENGTH	ON	R4 OTHERS	ON
R1 FONT	OFF								
R2 PITCH	OFF								
R3 FORM LENGTH	ON								
R4 OTHERS	ON								
<b>PRINTER (PROTOCOL) SETUP</b>									
5	<p>Press and release SUPER QUIET until row indicators are as follows:</p> <table> <tr> <td>R1 FONT</td><td>ON</td></tr> <tr> <td>R2 PITCH</td><td>ON</td></tr> <tr> <td>R3 FORM LENGTH</td><td>ON</td></tr> <tr> <td>R4 OTHERS</td><td>ON</td></tr> </table>	R1 FONT	ON	R2 PITCH	ON	R3 FORM LENGTH	ON	R4 OTHERS	ON
R1 FONT	ON								
R2 PITCH	ON								
R3 FORM LENGTH	ON								
R4 OTHERS	ON								
6	Press TEAR OFF to toggle protocol from DTR to XON/XOFF. The indicators over columns C1,C2, and C3 will be illuminated.								
7	Press FUNCTION to exit initial setup mode. The ON LINE/FUNCTION indicator will be illuminated.								

Table 2.5.37. Model KX-P3123 Printer Setup -CONT

Step	Procedure
8	<p align="center"><b>PRINTER (HANDSHAKE) SETUP</b></p> <p>Verify that HANDSHAKE on the OID COMMS page is set to XON/XOFF by the AOMC.</p> <p align="center"><b>NOTE</b></p> <p>If HANDSHAKE is not set correctly (to XON/XOFF) on the OID COMMS page by the AOMC, it is possible to overwrite the printer buffer. To verify and/or change the selection for HANDSHAKE, you must:</p> <ol style="list-style-type: none"> <li>Sign on to the OID as a technician.</li> <li>Press REVUE SITE CONFIG COMMS. If XON/XOFF appears as the HANDSHAKE selection, press EXIT to return to the 1-minute page; otherwise, you must continue to step c.</li> <li>Using the PREV and NEXT keys, move the cursor to the PRINTER port.</li> <li>Press CHANG and move cursor to HANDSHAKE.</li> <li>Press SEQN until XON/XOFF is selected.</li> <li>Press EXIT to exit COMMS page and return to the 1-minute page.</li> </ol>
<b>OPTIONAL PROCEDURES</b>	
<p align="center"><b>NOTE</b></p> <p>The following optional printer procedures are presented to enable the technician to optimize the KX-P3123 printer capabilities.</p>	
	<p align="center"><b>PRINT CURRENT SETTINGS (OPTIONAL)</b></p> <p align="center"><b>NOTE</b></p> <p>To print the current configuration of the printer, the following procedure is performed:</p> <ol style="list-style-type: none"> <li>Turn power switch off.</li> <li>While pressing the FUNCTION key on the printer, turn the power switch on to enter the setup mode. The ON LINE/FUNCTION will start blinking. Row indicators R1 (FONT), R2 (PITCH), R3 (FORM LENGTH), &amp; R4 (OTHERS) will be blinking.</li> <li>Press TEAR OFF, LOAD/PARK ON LINE, or FF. The printer will print all current settings.</li> <li>Press FUNCTION to exit the function mode.</li> </ol>
	<p align="center"><b>SUPER QUIET MODE (OPTIONAL)</b></p> <p align="center"><b>NOTE</b></p> <p>To allow the printer to function with reduced printer noise (but also with reduced printer speed), the following procedure should be performed:</p> <ol style="list-style-type: none"> <li>Be sure power is on. Make sure that the ON LINE/FUNCTION indicator is not blinking. If it is blinking, press FUNCTION.</li> <li>To enter super quiet mode, press SUPERQUIET. You will hear a beep and the SUPERQUIET indicator will illuminate.</li> <li>Press FUNCTION. The ON LINE/FUNCTION indicator will start blinking.</li> </ol>

Table 2.5.37. Model KX-P3123 Printer Setup -CONT

Step	Procedure								
	<p>d. Press and release TEAR OFF until only Row R4 (OTHERS) is illuminated and column C3 (MACRO #1) is blinking.</p> <p>e. Press LOAD PARK to set macro. You will hear a beep and the column indicator C3 will stop blinking and stay lit.</p> <p>f. Press TEAR OFF to save macro. You will hear two beeps and indicator C3 will start blinking.</p> <p>g. Press FUNCTION to exit the function mode. The ON LINE/FUNCTION indicator will stop blinking.</p>								
	<p style="text-align: center;"><b>ZERO SLASH SETUP (OPTIONAL)</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>This procedure causes a slash to be placed across the number 0 (zero) when it is printed.</p> <p>a. Press and release SUPER QUIET until the row indicators are as follows:</p> <table style="margin-left: 40px;"> <tr> <td>R1 FONT</td><td>OFF</td></tr> <tr> <td>R2 PITCH</td><td>OFF</td></tr> <tr> <td>R3 FORM LENGTH</td><td>OFF</td></tr> <tr> <td>R4 OTHERS</td><td>ON</td></tr> </table> <p>b. Press LOAD PARK; C2 indicator will illuminate.</p>	R1 FONT	OFF	R2 PITCH	OFF	R3 FORM LENGTH	OFF	R4 OTHERS	ON
R1 FONT	OFF								
R2 PITCH	OFF								
R3 FORM LENGTH	OFF								
R4 OTHERS	ON								

### 2.5.8 ACU CPU AND SIO BOARD JUMPER CONFIGURATIONS

When replacing a CPU board, the technician must configure jumpers on a basic XVME-601/6 CPU board (manufacturer's P/N 70601-006) for the slot it is to be installed. This changes the CPU part number to 62828-47006-XX, where XX is determined by the slot number. Similarly, when replacing a RS-232 SIO board, the technician must configure jumpers on a basic XVME-490/1 board (manufacturer's P/N 70490-001) to create the 62828-47014-XX part that corresponds to the slot it is installed. The following altered item drawings (located on the following pages) define the jumper configurations for the following ACU and DCP circuit boards:

<u>Part Number</u>	<u>Title</u>
62828-47006	CPU Circuit Card Assembly
-10 ASSY	ACU Primary CPU
-20 ASSY	ACU Secondary CPU
-30 ASSY	DCP Primary CPU
-40 ASSY	DCP Secondary CPU
62828-47008	Circuit Card Assembly, ACU Memory
62828-47013	Circuit Card Assembly, SIO RS-422
62828-47014	Circuit Card Assembly, SIO RS-232
62828-47016	Circuit Card Assembly, Analog/Digital
62828-47018	Circuit Card Assembly, Voice Processor
62828-47028	Circuit Card Assembly, Memory, DCP
62828-47033	Circuit Card Assembly, Digital I/O
62828-47003	Circuit Card Assembly, VME Resistor

### 2.5.9 JOHNSON DATA RF MODEM SETUP

Johnson Data rf modem frequencies are assigned and setup at the depot. Order rf modem part number 62828-40506-1 for 410.075 MHz or 62828-40506-2 for 410.950 Mhz.

\$  
\$  
\$  
\$

8765431

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90092-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5

JUMPERS SUPPLIED WITH FN 1.

JUMPER CONFIGURATION

-10 ASSY		-20 ASSY		-30 ASSY		-40 ASSY	
REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION
J1	IN	J1	IN	J1	IN	J1	IN
J2-A	IN	J2-A	IN	J2-A	IN	J2-A	IN
J2-B	OUT	J2-B	OUT	J2-B	OUT	J2-B	OUT
J3	IN	J3	OUT	J3	IN	J3	OUT
J4	IN	J4	IN	J4	IN	J4	IN
J5	IN	J5	OUT	J5	IN	J5	OUT
J6	IN	J6	IN	J6	IN	J6	IN
J7-A	IN	J7-A	IN	J7-A	IN	J7-A	IN
J7-B	OUT	J7-B	OUT	J7-B	OUT	J7-B	OUT
J8-A	IN	J8-A	IN	J8-A	IN	J8-A	IN
J8-B	OUT	J8-B	OUT	J8-B	OUT	J8-B	OUT
J9	OUT	J9	OUT	J9	OUT	J9	OUT
J10	IN	J10	IN	J10	OUT	J10	OUT
J11	OUT	J11	OUT	J11	IN	J11	IN
J12	OUT	J12	OUT	J12	OUT	J12	OUT
J13	OUT	J13	OUT	J13	OUT	J13	OUT
J14	OUT	J14	OUT	J14	OUT	J14	OUT
J15	OUT	J15	OUT	J15	OUT	J15	OUT
J16	IN	J16	IN	J16	IN	J16	IN
J17-A	OUT	J17-A	OUT	J17-A	OUT	J17-A	OUT
J17-B	OUT	J17-B	OUT	J17-B	OUT	J17-B	OUT
J17-C	OUT	J17-C	OUT	J17-C	OUT	J17-C	OUT
J17-D	IN	J17-D	IN	J17-D	IN	J17-D	IN
J18-A	OUT	J18-A	OUT	J18-A	OUT	J18-A	OUT
J18-B	OUT	J18-B	OUT	J18-B	OUT	J18-B	OUT
J18-C	OUT	J18-C	OUT	J18-C	OUT	J18-C	OUT
J18-D	IN	J18-D	IN	J18-D	IN	J18-D	IN
J19-A	OUT	J19-A	OUT	J19-A	OUT	J19-A	OUT
J19-B	OUT	J19-B	OUT	J19-B	OUT	J19-B	OUT
J19-C	OUT	J19-C	OUT	J19-C	OUT	J19-C	OUT
J19-D	IN	J19-D	IN	J19-D	IN	J19-D	IN
J20-A	OUT	J20-A	OUT	J20-A	OUT	J20-A	OUT
J20-B	OUT	J20-B	OUT	J20-B	OUT	J20-B	OUT
J20-C	OUT	J20-C	OUT	J20-C	OUT	J20-C	OUT
J20-D	IN	J20-D	IN	J20-D	IN	J20-D	IN

DWG NO. 62828-47006

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	INC ECNS 16917,16932 (A01-A02)	91-9-9	JLH/TN
	B	INC ECNS 18428,20525 (B01-B02)	93-3-8	TBN
	C	INC ECN 21138 (C01)	93-6-14	TBN
	D	INC ECN 25908 (D01)	95-6-05	CDR
	E	INC E01 (ECN 31214)	97-06-13	DD/CGF
	F	INC ECN AS00192	98-1-8	CGF

SH NO. REV LTR

1	F
2	-

ALTERED ITEM DRAWING

SEE SEPARATE PARTS LIST PL62828-47006

CONTR 50-SANW-1-00050

DFTG L.KLEIN 91-4-22

CHECKING M.KRAUSE 91-4-30

ENGRG J.R.ROWE

PROJ A.H.LAYMAN

MFG D.A.FRANCKOWIAK

QA W.J.McCONNELL

ILS B.L.TURNBAUGH

AAI CORPORATION

HUNT VALLEY,MD 21030-0126

CIRCUIT CARD ASSY, CPU

SIZE CAGE CODE DWG NO. 62828-47006

SCALE 2/1 SHEET 1 OF 2

COMPUTER AIDED DESIGN DOCUMENT

10,20 30,40 10,20

DASH NO. SERIAL NO. NEXT ASSY USED ON

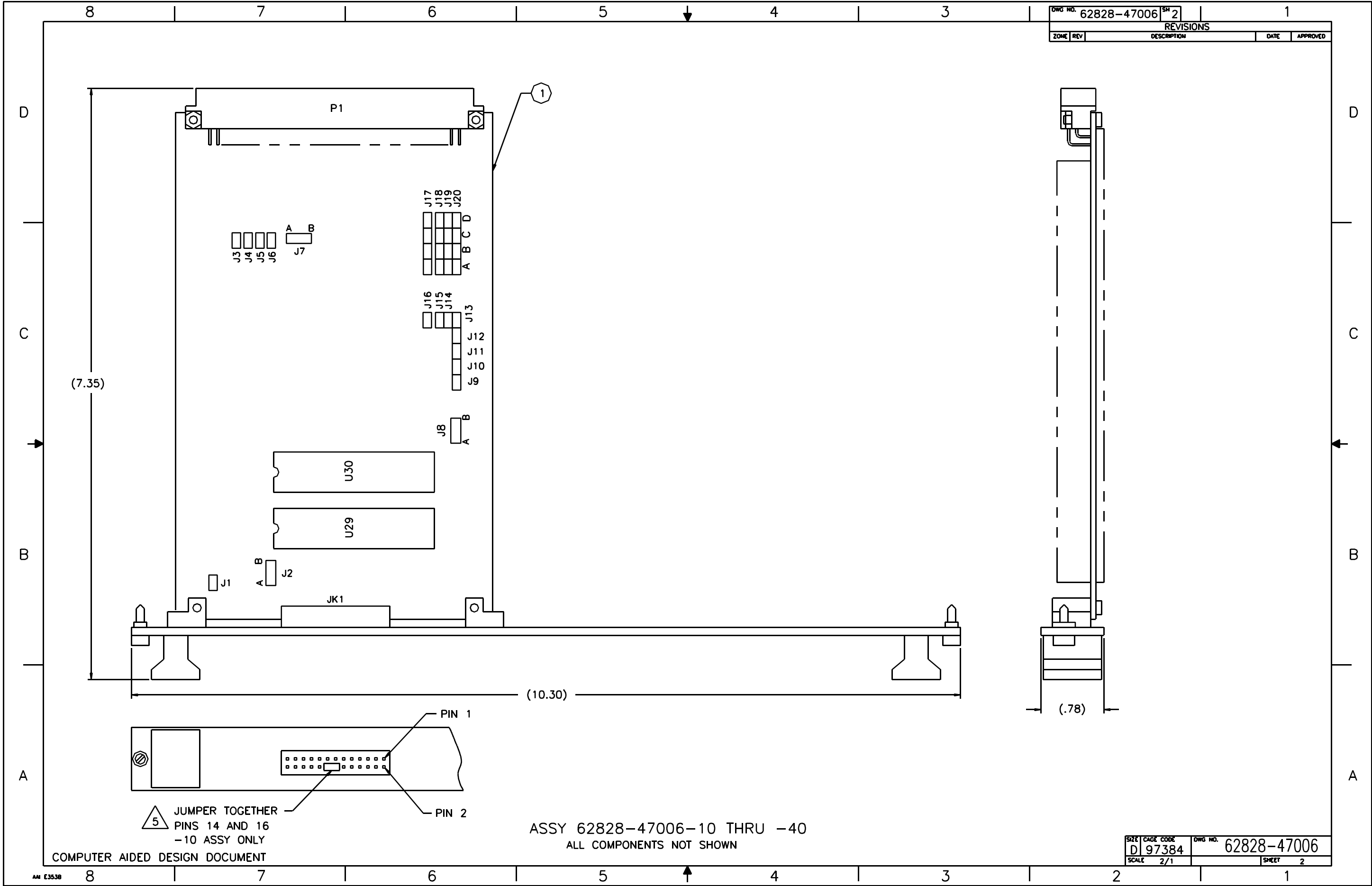
EFFECTIVITY APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ± ° ±

62828-40300 ASOS

62828-40070 ASOS

62828-40044 ASOS



8

7

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DWG NO. 62828-47008

1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90087-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5 JUMPERS SUPPLIED WITH FN 1.

6. SWITCH SW8 MAY BE LEFT IN EITHER OPEN OR CLOSED POSITIONS.

7 INSTALL ON ONE PIN ONLY. JUMPER WILL BE REPOSITIONED TO MOUNT ON BOTH PINS IN THE FIELD.

8 U52 CONSISTS OF TWO MICROCIRCUITS.

JUMPER CONFIGURATION

REF

DES

DISPOSITION

J1

OUT

J2

OUT

J3-A

OUT

J3-B

IN

J4

IN

J5

IN

J6

OUT

J7-A

IN

J7-B

OUT

J8-A

IN

J8-B

OUT

J9-A

IN

J9-B

OUT

J10-A

IN

J10-B

OUT

J11

OUT

J12-A

IN

J12-B

OUT

J13

IN

J14

OUT

J15

IN

J16-A

OUT

J16-B

IN

J17-A

OUT

J17-B

IN

J18-A

IN

J18-B

OUT

J19-A

IN

J19-B

OUT

J20-A

IN

J20-B

OUT

J21

IN

J22

J23

OUT

J24

IN

J25-A

OUT

J25-B

IN

J26-A

OUT

J26-B

OUT

J27-A

IN

J27-B

OUT

J28-A

IN

J28-B

OUT

J29

IN

SH NO.

REV LTR

1

E

2

C

3

E

ALTERED ITEM DRAWING

SEE SEPARATE PARTS LIST PL62828-47008

CONTR 50-SANW-1-00050

DFTG L.KLEIN 91-4-22

CHECKED F.CUSTODERO 91-5-1

ENGRG J.R.ROWE

PROJ A.H.LAYMAN

TRG D.A.FRANCKOWIAK

QA W.J.McCONNELL

RLS B.L.TURNBAUGH

AAI CORPORATION

HUNT VALLEY,MD 21030-0126

CIRCUIT CARD ASSEMBLY,

ACU MEMORY

SIZE CAGE CODE

D 97384

DWG NO.

62828-47008

SCALE 2/1

SHEET 1 OF 3

10,20

62828-40044

ASOS

DASH NO.

SERIAL NO.

NEXT ASSY

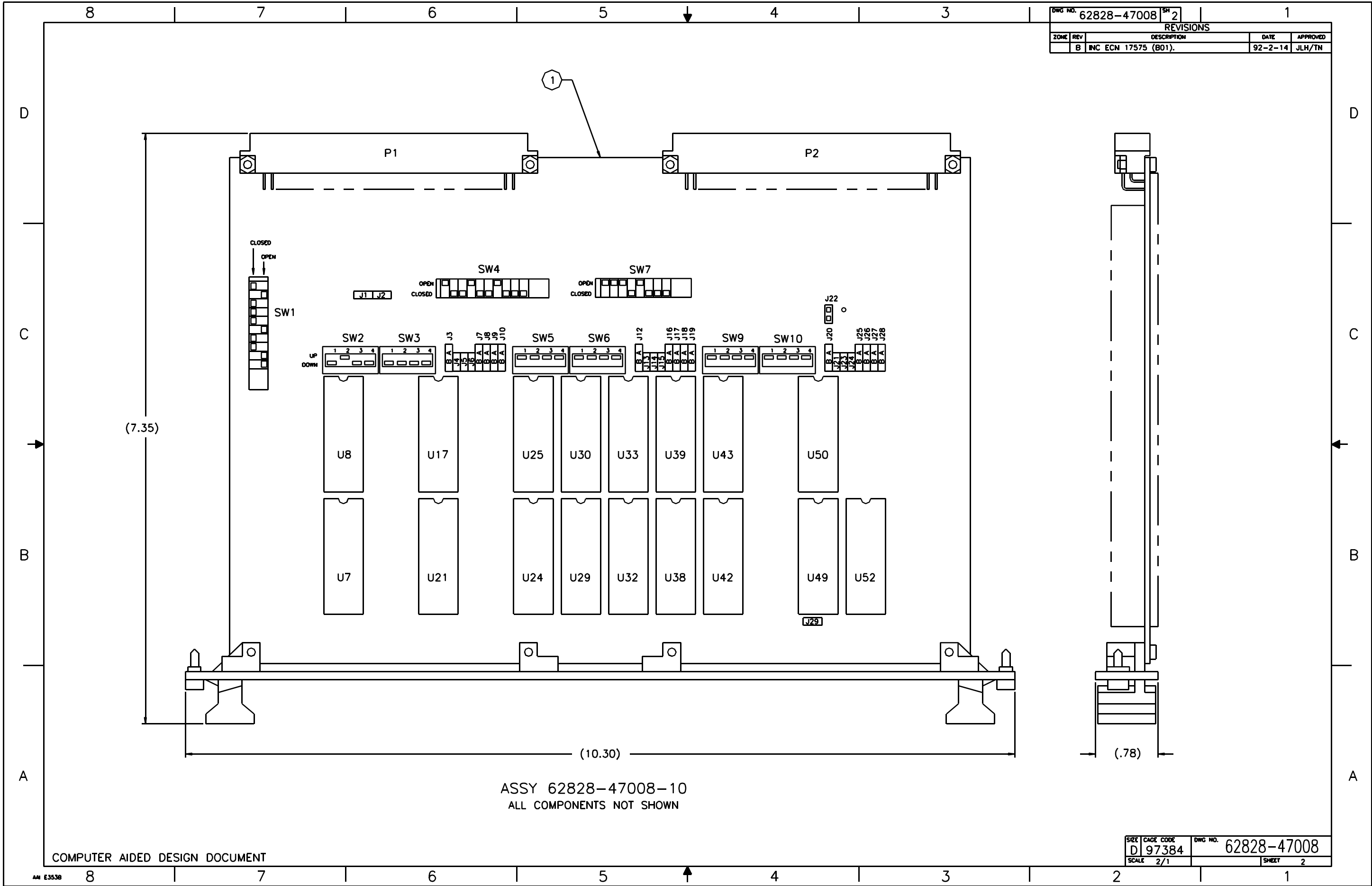
USED ON

EFFECTIVITY

APPLICATION

COMPUTER AIDED DESIGN DOCUMENT

AAI E3528



DWG NO. 62828-47008		SH 2	1	
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	B	INC ECN 17575 (B01).	92-2-14	JLH/TN

SIZE	CAGE CODE	DWG NO.
D	97384	62828-47008
SCALE	2/1	SHEET 2





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DWG NO. 62828-47013

SH 1

1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90090-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5

JUMPERS SUPPLIED WITH CIRCUIT CARD.

JUMPER CONFIGURATION

REF DES

DISPOSITION

J3-A

OUT

J3-B

IN

J4-A

OUT

J4-B

IN

J5-A

OUT

J5-B

IN

J6-A

OUT

J6-B

IN

J7

OUT

JA1

IN

JA2

OUT

JA3

IN

JA10

IN

JA11

IN

JA12

IN

JA13

IN

JA14

IN

JA15

IN

SH NO.

REV LTR

1

D

2

-

ALTERED ITEM DRAWING

COMR 50-SANW-1-00050

DWG T.SOLTAS 91-4-26

CHECKING F.CUSTODERO 91-5-4

ENGRG J.R. ROWE

PROJ A.H. LAYMAN

MFG D.A. FRANKOWIAK

QA W.J. MCCONNELL

ILS B.L. TURNBAUGH

AAI CORPORATION

HUNT VALLEY, MD 21030-0126

CIRCUIT CARD ASSEMBLY,

SIO, RS-422

SIZE D

CAGE CODE 97384

DWG NO. 62828-47013

SCALE 2/1

SHEET 1 OF 2

COMPUTER AIDED DESIGN DOCUMENT

10

62828-40340

ASOS

10

62828-40044

ASOS

DASH NO.

SERIAL NO.

NEXT ASSY

USED ON

EFFECTIVITY

APPLICATION

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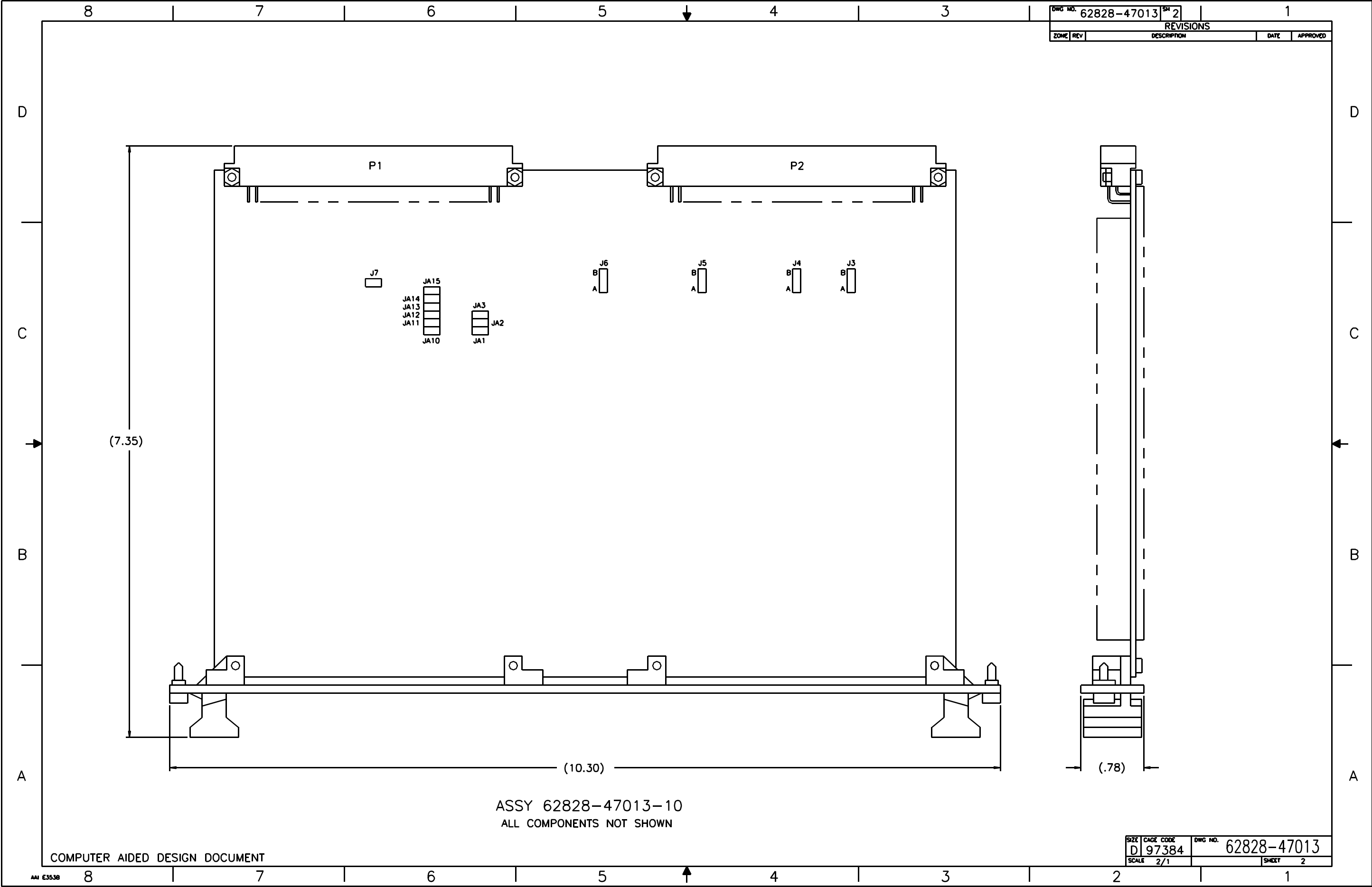
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DWG NO. 62828-47014

1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90089-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5 JUMPERS SUPPLIED WITH CIRCUIT CARD.

6. -80 THRU -110 ASSEMBLIES APPEAR AS LINE CALLOUTS ON DRAWING 62828-40070.

-30 THRU -60 ASSEMBLIES APPEAR AS LINE CALLOUTS ON DRAWING 62828-40044.

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
A	INC ECNS 16877,16917,16932 (A01-A03)	91-9-9	JLH/TN	
B	INC ECN 20525 (B01).	93-03-24	TBN	
C	INC ECNS 25041 & 25908 (C01-C02).	95-06-22	CDR	
D	INC D01 (ECN 31214)	97-06-13	DD/CGF	

JUMPER CONFIGURATION

5

ASSY -10		ASSY -20		ASSY -30		ASSY -40		ASSY -50		ASSY -60	
REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION
JA1	IN	JA1	IN	JA1	IN	JA1	IN	JA1	IN	JA1	IN
JA2	OUT	JA2	OUT	JA2	OUT	JA2	OUT	JA2	OUT	JA2	OUT
JA3	IN	JA3	IN	JA3	IN	JA3	IN	JA3	IN	JA3	IN
JA10	OUT	JA10	IN	JA10	OUT	JA10	IN	JA10	OUT	JA10	IN
JA11	IN	JA11	OUT	JA11	OUT	JA11	IN	JA11	IN	JA11	OUT
JA12	IN	JA12	IN	JA12	IN	JA12	OUT	JA12	OUT	JA12	OUT
JA13	IN	JA13	IN	JA13	IN	JA13	IN	JA13	IN	JA13	IN
JA14	IN	JA14	IN	JA14	IN	JA14	IN	JA14	IN	JA14	IN
JA15	IN	JA15	IN	JA15	IN	JA15	IN	JA15	IN	JA15	IN
J1	OUT	J1	OUT	J1	OUT	J1	OUT	J1	OUT	J1	OUT

JUMPER CONFIGURATION

5

ASSY -70		ASSY -80		ASSY -90		ASSY -100		ASSY -110		ASSY -120	
REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION	REF DES	DISPOSITION
JA1	OUT	JA1	OUT	JA1	OUT	JA1	OUT	JA1	OUT	JA1	IN
JA2	OUT	JA2	OUT	JA2	OUT	JA2	OUT	JA2	OUT	JA2	OUT
JA3	IN	JA3	IN	JA3	IN	JA3	IN	JA3	IN	JA3	IN
JA10	OUT	JA10	IN	JA10	OUT	JA10	IN	JA10	OUT	JA10	OUT
JA11	IN	JA11	OUT	JA11	OUT	JA11	IN	JA11	IN	JA11	OUT
JA12	IN	JA12	IN	JA12	IN	JA12	OUT	JA12	OUT	JA12	OUT
JA13	IN	JA13	IN	JA13	IN	JA13	IN	JA13	IN	JA13	IN
JA14	IN	JA14	IN	JA14	IN	JA14	IN	JA14	IN	JA14	IN
JA15	IN	JA15	IN	JA15	IN	JA15	IN	JA15	IN	JA15	IN
J1	OUT	J1	OUT	J1	OUT	J1	OUT	J1	OUT	J1	OUT

SH NO.

REV LTR

1	D
2	C

ALTERED ITEM DRAWING

AAI CORPORATION  
HUNT VALLEY,MD 21030-0126

CIRCUIT CARD ASSEMBLY,  
SIO, RS-232

CONTR 50-SANW-1-00050  
DFTG T.SOLTAS 91-4-26  
CHECKING F.CUSTODERO 91-5-2  
ENGRG J.R.ROWE  
PROJ A.H.LAYMAN  
MFG D.A.FRANCOWIAK  
QA W.J.McCONNELL  
ILS B.L.TURNBAUGH

SIZE D  
CAGE CODE 97384  
SCALE 2/1

DWG NO. 62828-47014  
SHEET 1 OF 2

COMPUTER AIDED DESIGN DOCUMENT

10 THRU 60

120

80 THRU 110

70

30 THRU 60

10,20

DASH NO.

SERIAL NO.

EFFECTIVITY

62828-40340

ASOS

62828-40300

SINGLE CAB ASOS

62828-40000

ASOS

62828-40070

ASOS

62828-40000

ASOS

62828-40044

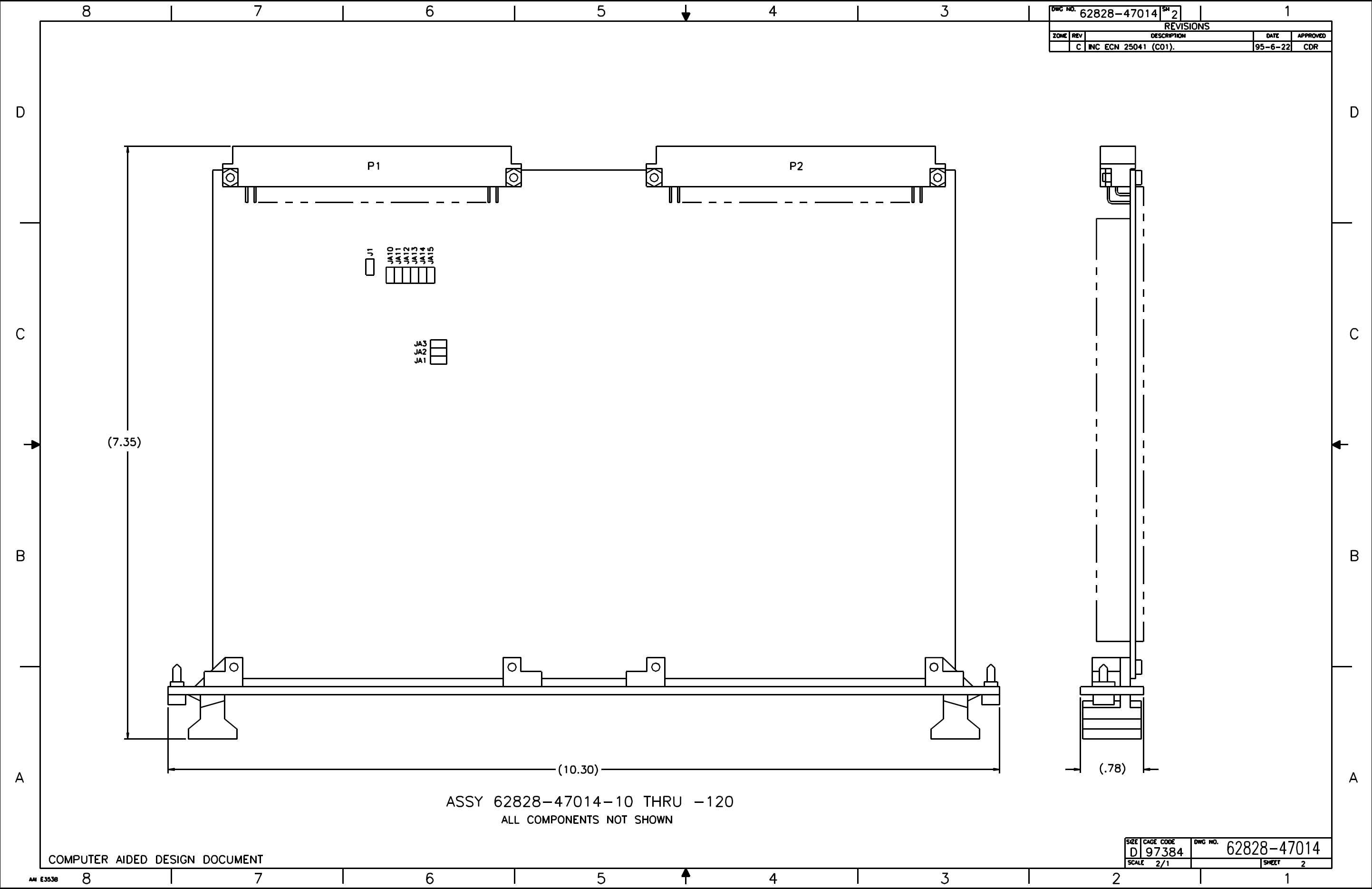
ASOS

NEXT ASSY

USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE BY INCHES.  
TOLERANCES ON  
FRACTIONS DECIMALS ANGLES  
± — .XX ± — ± —  
± — .XXX ± — ± —



DWG NO.		62828-47014		SH	2	1	
REVISIONS							
ZONE	REV	DESCRIPTION				DATE	APPROVED
	C	INC ECN 25041 (C01).				95-6-22	CDR

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4

3

DWG NO. 62828-47016

SH 1

1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90091-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5

JUMPERS SUPPLIED WITH CIRCUIT CARD.

JUMPER CONFIGURATION

5

-10 ASSY		-20 ASSY	
REF DES	DISPOSITION	REF DES	DISPOSITION
J1-A	OUT	J1-A	OUT
J1-B	IN	J1-B	IN
J2-A	IN	J2-A	IN
J2-B	OUT	J2-B	OUT
J3-A	OUT	J3-A	OUT
J3-B	IN	J3-B	IN
J4-A	OUT	J4-A	OUT
J4-B	IN	J4-B	IN
J5-A	OUT	J5-A	OUT
J5-B	IN	J5-B	IN
J6 THRU J9	OUT	J6 THRU J9	OUT
J10	IN	J10	IN
J11	IN	J11	IN
J12	IN	J12	IN
J13 THRU J20	OUT	J13 THRU J20	OUT
J21-A	IN	J21-A	IN
J21-B	OUT	J21-B	OUT
J21-C	IN	J21-C	IN
J21-D	OUT	J21-D	OUT
J22-A	IN	J22-A	IN
J22-B	OUT	J22-B	OUT
J22-C	OUT	J22-C	OUT
J22-D	OUT	J22-D	OUT
J23	OUT	J23	OUT
J24	OUT	J24	OUT
J25	IN	J25	IN
J26	IN	J26	IN
J27	IN	J27	IN
J28	OUT	J28	OUT
J29	IN	J29	IN
J30	IN	J30	IN
J31	IN	J31	OUT
J32	OUT	J32	OUT

SH NO.

REV LTR

1

E

2

-

ALTERED ITEM DRAWING

COMR 50-SANW-1-00050

DFTG L.KLEIN

91-4-22

CHECKING F.CUSTODERO 91-5-2

ENGRG J.R. ROWE

PROJ A.H. LAYMAN

MFG D.A. FRANKOWIAK

QA W.J. McCONNELL

ILS B.L. TURNBAUGH

SIZE D

CAGE CODE 97384

DWG NO. 62828-47016

SCALE 2/1

SHEET 1 OF 2

AAI CORPORATION

HUNT VALLEY, MD 21030-0126

CIRCUIT CARD ASSEMBLY,

ANALOG/DIGITAL

10

20

10

10

DASH NO.

SERIAL NO.

NEXT ASSY

USED ON

EFFECTIVITY

APPLICATION

62828-40340

ASOS

62828-40000

ASOS

62828-40070

ASOS

62828-40044

ASOS

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES.

TOLERANCES ON

FRACTIONS DECIMALS ANGLES

± — .XX ± — ± —

.XXX ± — ± —

COMPUTER AIDED DESIGN DOCUMENT

8

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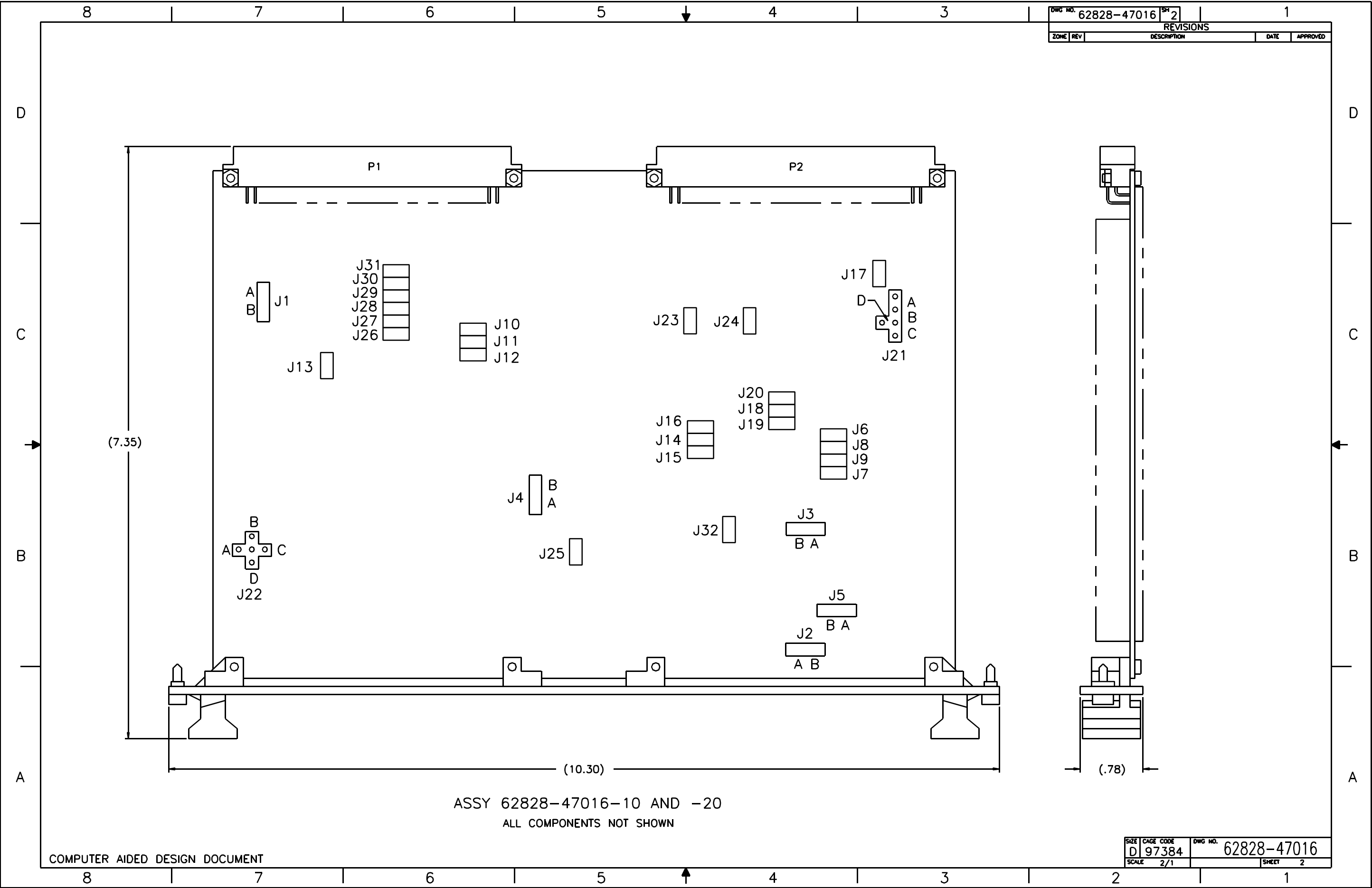
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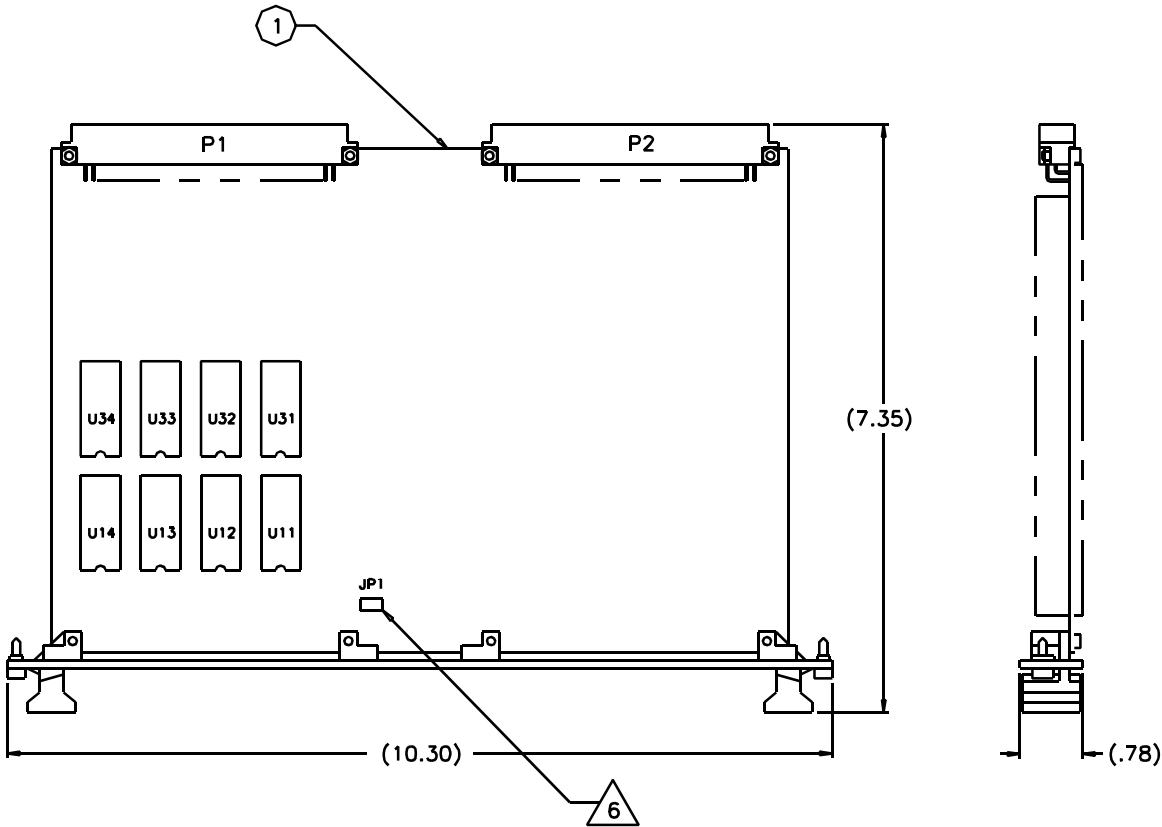
1



NOTES:

- 1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
- 2. MATERIAL: MAKE FROM 62828-90084-1.
- 3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.
- 4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.
- 5. ASSY NUMBER 62828-47018-10 CONSISTS OF TWO CIRCUIT CARDS, AN AUDIO CARD AND A CPU CARD. THE ALTERATIONS SHOWN ARE FOR THE CPU CARD ONLY. THE AUDIO CARD WILL REMAIN AS PART OF THE ASSY BUT WILL NOT BE ALTERED.
- 6. REMOVE JUMPER AT JP1 AND DISCARD.

DWG NO. 62828-47018		SH 1	1	
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
A	INC	ECNS 16917,16932 (A01-A02)	91-9-9	JLH/TN
B	INC	ECNS 20525, 20790 (B01-B02).	93-04-13	TBN
C	INC	ECN 25908 (C01).	95-06-06	CDR
D	INC	D01 (ECN 31214).	97-06-13	DO/CGF



ASSY 62828-47018-10  
ALL COMPONENTS NOT SHOWN

ALTERED ITEM DRAWING  
SEE SEPARATE PARTS LIST PL62828-47018

COMPUTER AIDED DESIGN DOCUMENT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .XX ± .XX ± .XX				CONTR 50-SANW-1-00050 DFTG L.KLEIN 91-4-22 CHECKING F.CUSTODERO 91-5-4 ENGRG J.R. ROWE PROJ A.H. LAYMAN MFG D.A. FRANKOWIAK QA W.J. McCONNELL RLS B.L. TURNBAUGH	AAI CORPORATION HUNT VALLEY, MD 21030-0126	
10 10	62828-40340 62828-40044	ASOS ASOS	USED ON	SIZE D 97384	DWG NO. 62828-47018	
DASH NO.	SERIAL NO.	NEXT ASSY	APPLICATION	SCALE 1/1	SHEET 1 OF 1	

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DWG NO. 62828-47028

SH 1

1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90086-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5

JUMPERS SUPPLIED WITH FN 1.

6

JUMPER WILL BE REMOVED DURING FIELD INSTALLATION (DISPOSITION = OUT).

7

INSERT JUMPER AT THIS LOCATION DURING FIELD INSTALLATION (DISPOSITION = IN).

8. -20 ASSEMBLY APPEARS AS LINE CALLOUT IN DRAWING 62828-40044.

JUMPER CONFIGURATION

5

REF	DES	DISPOSITION	REF	DES	DISPOSITION	REF	DES	DISPOSITION
J1		IN	J21		IN	J39-A		OUT
J2-A		IN	J22		IN	J39-B		IN
J2-B		OUT	J23		IN	J40		IN
J3-A		OUT	J24		OUT	J41		IN
J3-B		IN	J25-A		IN	J42-A		IN
J4		OUT	J25-B		OUT	J42-B		OUT
J5		OUT	J26-A		OUT	J42-C		OUT
J6		OUT	J26-B		IN	J43-A		OUT
J7		OUT	J27-A		OUT	J43-B		IN
J8		OUT	J27-B		IN	J44-A		IN
J9		IN	J28-A		OUT	J44-B		OUT
J10		IN	J28-B		IN	J45-A		IN
J11		IN	J29-A		OUT	J45-B		OUT
J12		IN	J29-B		IN	J46-A		IN
J13		OUT	J30		IN	J46-B		OUT
J14		IN	J31		IN	J47		OUT
J15		OUT	J32		IN	J48		IN
J16		IN	J33		OUT	J49		IN
J17-A		IN	J34-A		IN	J50		OUT
J17-B		OUT	J34-B		OUT	J51		IN
J18-A		IN	J35		OUT	J52		IN
J18-B		OUT	J36		IN			
J19-A		IN	J37		IN			
J19-B		OUT	J38-A		IN			
J20-A		IN	J38-B		OUT			
J20-B		OUT	J38-C		OUT			

SH NO.

REV LTR

1	F
2	E
3	D

ALTERED ITEM DRAWING

SEE SEPARATE PARTS LIST PL62828-47028

CONTR 50-SANW-1-00050

DFTG T.SOLTAS 91-4-30

CHECKING F.CUSTODERO 91-5-4

DRG J.R.ROWE

PROJ A.H.LAYMAN

MFG D.A.FRANCKOWIAK

QA W.J.McCONNELL

ELS B.L.TURNBAUGH

AAI CORPORATION

HUNT VALLEY,MD 21030-0126

CIRCUIT CARD ASSEMBLY, MEMORY

SIZE CAGE CODE

D 97384

DWG NO.

62828-47028

SCALE 2/1

SHEET 1 OF 3

COMPUTER AIDED DESIGN DOCUMENT

20

10

DASH NO.

SERIAL NO.

EFFECTIVITY

62828-40044

62828-40070

NEXT ASSY

USED ON

ASOS

ASOS

APPLICATION

8

7

6

5

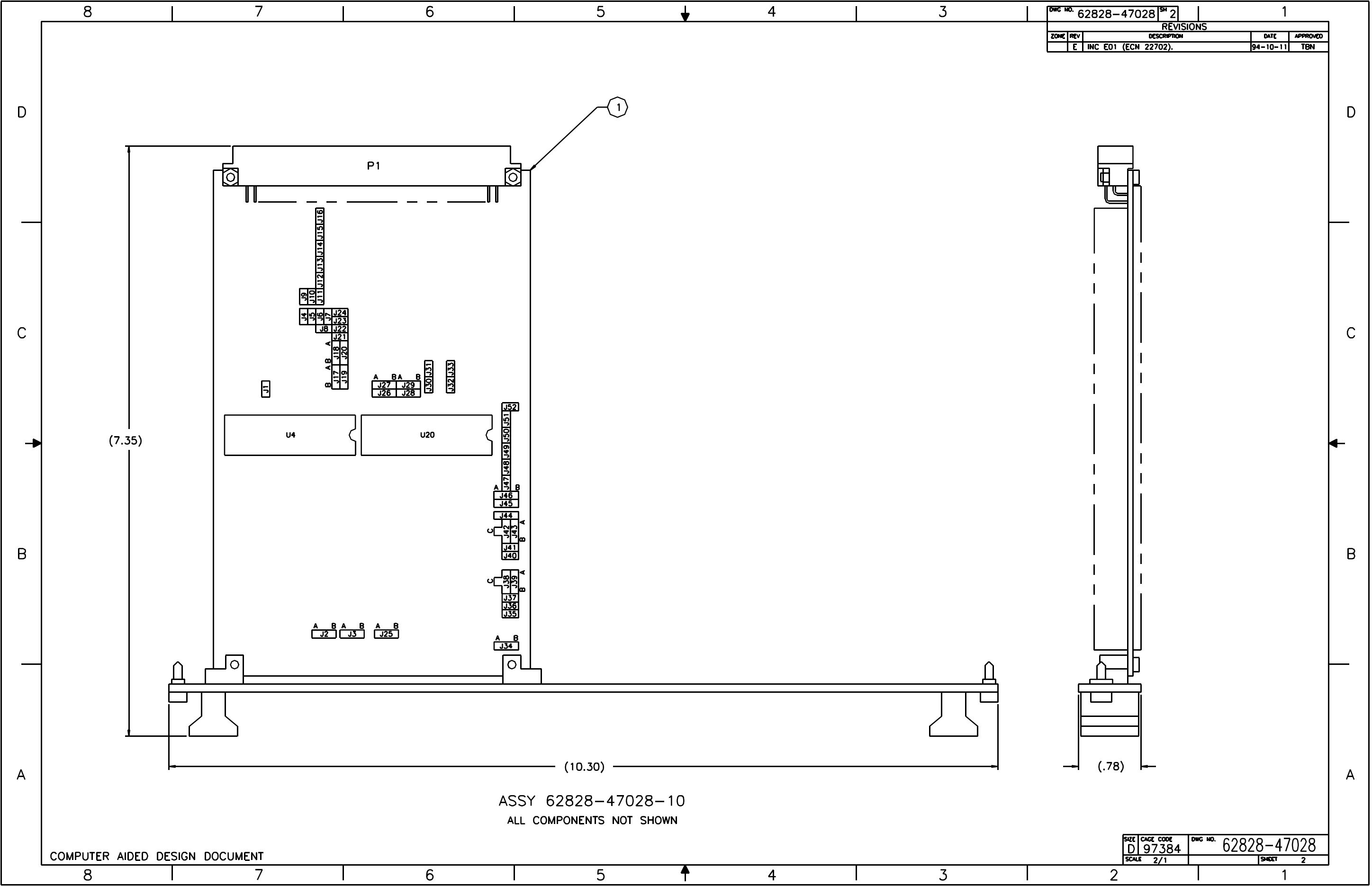
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3

2

1





DWG NO. 62828-47028		SH 2	1	
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	E	INC EO1 (ECN 22702).	94-10-11	TBN

ASSY 62828-47028-10  
ALL COMPONENTS NOT SHOWN

COMPUTER AIDED DESIGN DOCUMENT

SIZE	CAGE CODE	DWG NO.
D	97384	62828-47028
SCALE	2/1	SHEET 2



8

7

6

5

4

3

DWG NO. 62828-47033

SH 1

1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. MATERIAL: MAKE FROM 62828-90088-1.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. IDENTIFY PER MIL-STD-130, METHOD OPTIONAL, WITHOUT DAMAGE TO PART. LOCATE IN ANY CONVENIENT AREA ON THE PRINTED CIRCUIT BOARD OR REAR OF MOUNTING PANEL. DO NOT OBLITERATE OR OBSCURE VENDOR IDENTIFICATION OR SERIALIZATION.

5

JUMPERS SUPPLIED WITH CIRCUIT CARD.

JUMPER CONFIGURATION

REF DES

DISPOSITION

J1

IN

J2

OUT

J3

IN

JA1

IN

JA2

IN

JA3

IN

JA10

IN

JA11

OUT

JA12

IN

JA13

OUT

JA14

IN

JA15

IN

SH NO.

REV LTR

1

D

2

-

ALTERED ITEM DRAWING

COMPR 50-SANW-1-00050

DFTG T.SOLTAS 91-4-29

CHECKING F.CUSTODERO 91-5-2

ENGRG J.R. ROWE

PROJ A.H. LAYMAN

MFG D.A. FRANKOWIAK

QA W.J. MCCONNELL

ILS B.L. TURNBAUGH

AAI CORPORATION

HUNT VALLEY, MD 21030-0126

CIRCUIT CARD ASSEMBLY,

DIGITAL I/O

SIZE D

CAGE CODE 97384

DWG NO. 62828-47033

SCALE 2/1

SHEET 1 OF 2

COMPUTER AIDED DESIGN DOCUMENT

DASH NO.

SERIAL NO.

NEXT ASSY

USED ON

EFFECTIVITY

APPLICATION

10

62828-40340

ASOS

10

62828-40070

ASOS

10

62828-40044

ASOS

8

7

6

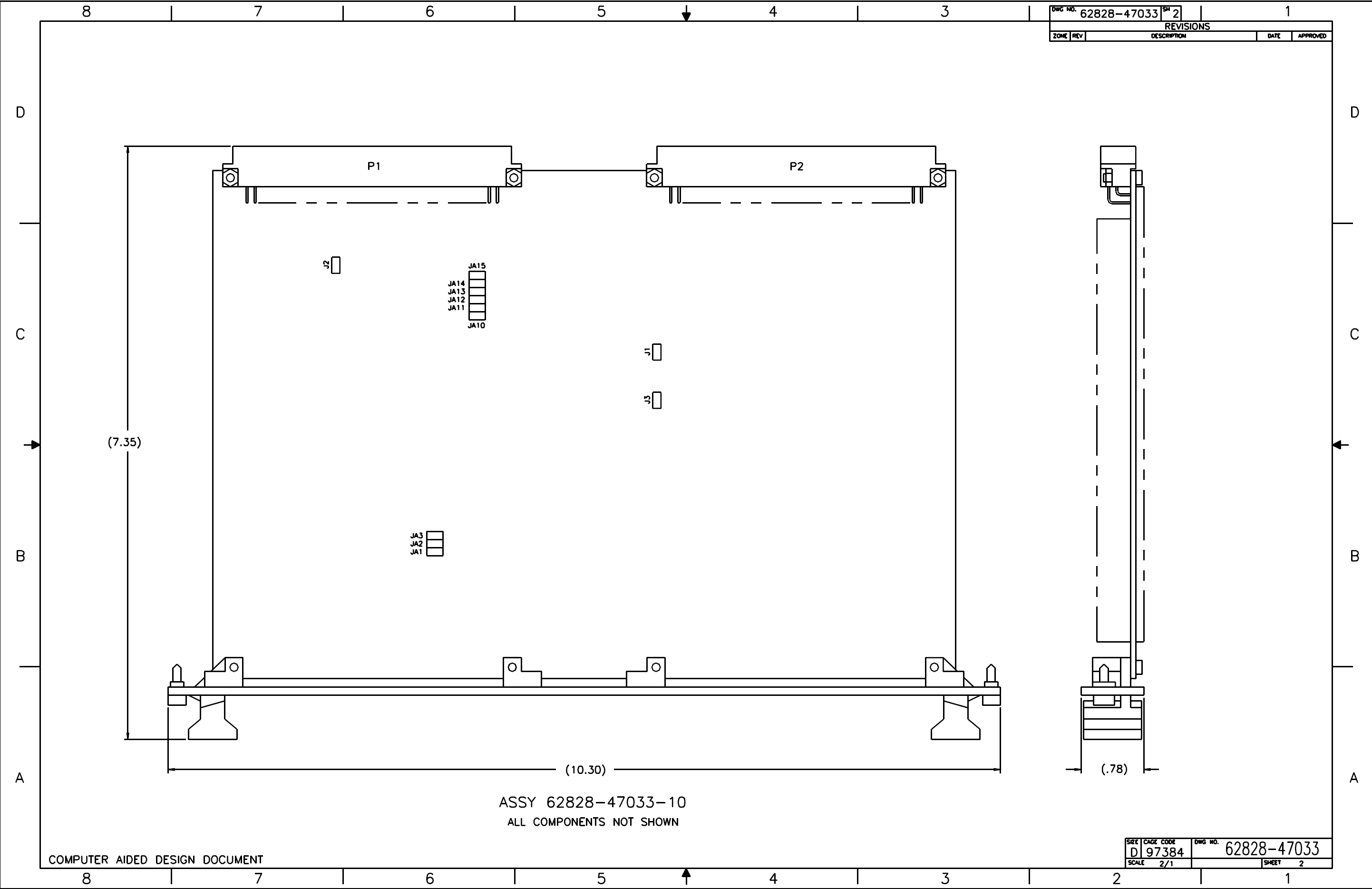
5

4

3

2

1



DWG NO. 62828-47033		SH 2	1	
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

ASSY 62828-47033-10  
ALL COMPONENTS NOT SHOWN

COMPUTER AIDED DESIGN DOCUMENT

SIZE	CAGE CODE	DWG NO.
D	97384	62828-47033
SCALE	2/1	SHEET 2

8765431

1

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
A	INC ECN 15398,15933,15948,16431,16831 (A01-A05)	91-8-31	SL/TIN	
B	INC ECN 20517 (B01).	93-3-12	TBN	
C	INC ECN 21701 (C01).	93-08-06	TBN	
D	INC ECN 25072 (D01).	94-10-21	TBN	
E	INC E01-E02 (ECN 25664 & 25908)	95-09-18	CDR	
F	INC F01-F02 (ECNS 27496 & 28323)	96-04-30	CDR	

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.

2. SOLDER PER MIL-STD-454, REQUIREMENT 5 USING FN 9.

3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH MIL-STD-454, REQUIREMENT 9.

4. SQUARE (□) INDICATES PIN 1 LOCATION.

5. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS. ASSEMBLIES AND EQUIPMENT SHALL BE IN ACCORDANCE WITH DOD-STD-1686, CLASS 2 AND DOD-HDBK-263. PLACE LABEL IN A CLEAR VISIBLE AREA ON THE COMPONENT SIDE.

6. INSTALL ONLY THE PARTS INDICATED ON PARTS LIST. INSTALL JUMPER WIRE (FN 10) ON COMPONENT SIDE AT LOCATIONS SPECIFIED IN JUMPER CHART. INSTALL JUMPER WIRE (FN 18) ON -20 ASSEMBLY, U2-6 TO R141-2 LOCATION ONLY. USE INSULATION (FNS 11 AND 19) AS REQUIRED TO PREVENT SHORTING.

7. MARK APPROPRIATE DASH NUMBER WITH .12 HIGH GOTHIC STYLE CHARACTERS USING BLACK LACQUER PER TT-L-58, TYPE II, CLASS 2. LOCATE APPROXIMATELY AS SHOWN.

8. E1 THRU E4 ARE PADS ONLY (NO COMPONENTS).

9. THIS IS A SERIALIZATION CONTROLLED ITEM.

10. FN 14 (S1) SWITCH SETTINGS, WHICH ARE SITE SPECIFIC, ARE DEFINED FOR INSTALLATION.

JUMPER CHART

-10		-20		-30	
FROM	TO	FROM	TO	FROM	TO
R1-1	R1-2	R75-1	R75-2	R1-1	R1-2
R6-1	R6-2	R78-1	R78-2	R6-1	R6-2
R45-1	R45-2	U2-6	R141-2	R7-1	R7-2
R48-1	R48-2			R75-1	R75-2
R78-1	R78-2			R78-1	R78-2
R80-1	R80-2			R80-1	R80-2
E1	E3			E1	E3
E2	E4			E2	E4
R96-1	R96-2				
R99-1	R99-2				

CAUTION

SENSITIVE ELECTRONIC DEVICES

SEE SEPARATE PARTS LIST PL62828-47003

AAI CORPORATION

HUNT VALLEY, MD 21030-0126

VME RESISTOR BOARD

ASSEMBLY

CONTR 50-SANW-1-00050

DFTG W.BREHM 90-12-17

CHECKING E.EVANS 91-01-02

ENGRG N.SUTER

PRDJ J.ROWE

MR D.FRANCKOWIAK

QA W.McCONNELL

ILS B.TURNBAUGH

SIZE D

CAGE CODE 97384

DWG NO. 62828-47003

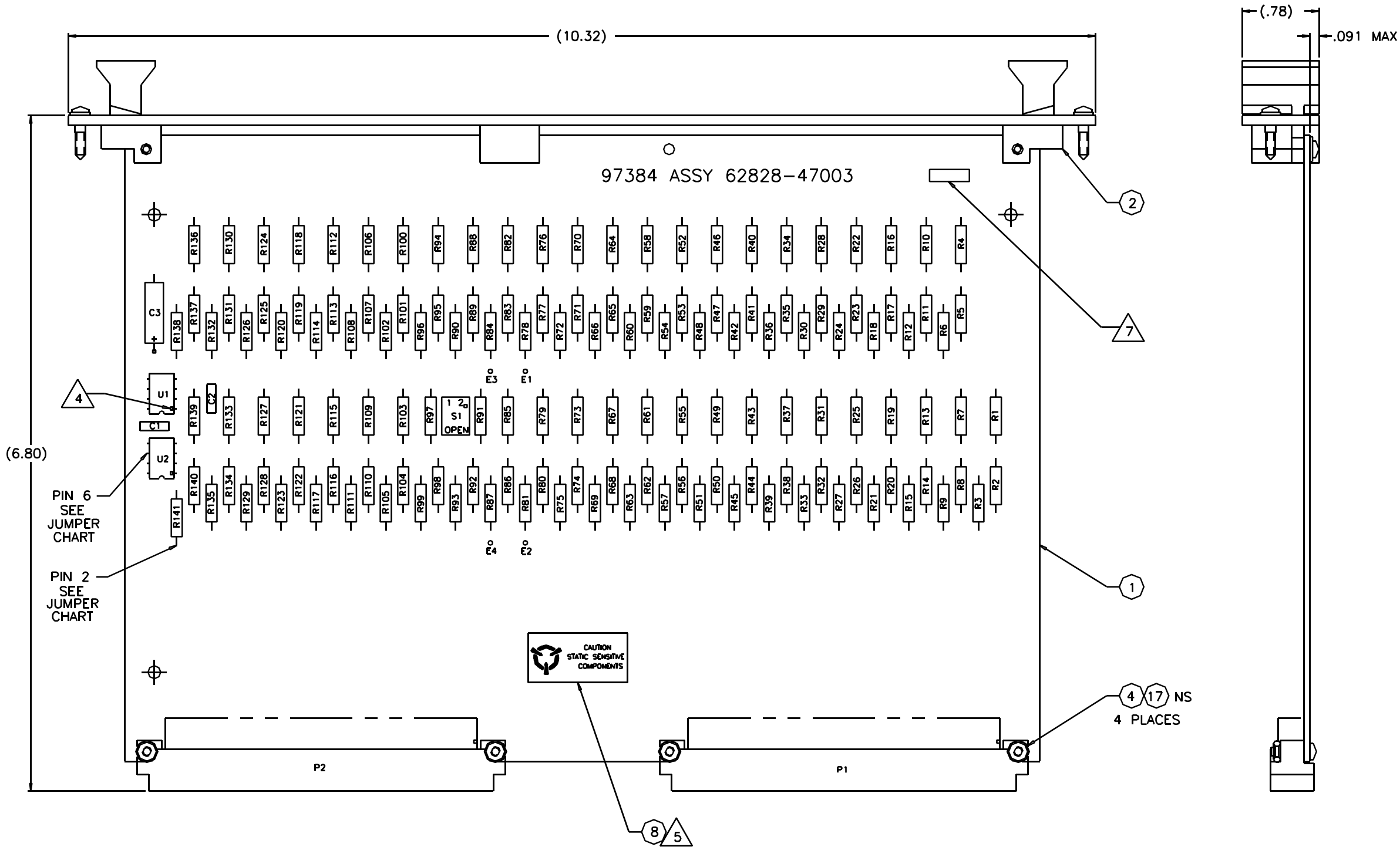
SCALE 2/1

SHEET 1 OF 2

COMPUTER AIDED DESIGN DOCUMENT

AAI E3528

DWG NO. 62828-47003		SW 2	1	
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	INC ECN 15948 & 16431 (A03-A04)	91-8-31	SL/TN
	D	INC ECN 25072 (D01).	94-10-21	TBN
	E	INC E01 (ECN 25664)	95-09-18	CDR



ASSY 62828-47003-10 SHOWN  
ASSY 62828-47003-20 & -30 SIMILAR

COMPUTER AIDED DESIGN DOCUMENT

SIZE	CAGE CODE	DWG NO.
D	97384	62828-47003
SCALE	2/1	SHEET 2